Exhibit 1

October 5, 2022

Jinnifer Mariman
McGarvey, Heberling, Sullivan & Lacey, P.C.
345 First Avenue East
Kalispell, MT 59901

Dear Jinnifer,

I have reviewed the expert report of Dr. John Kind, dated June 10, 2022, pertaining to the Libby Plaintiff actions against the BNSF Railway Company in *Walder v. BNSF Railway Company*. I thank Dr. Kind for his analyses and opinions in this matter. My opinions, to a reasonable degree of scientific probability, regarding Dr. Kind's report follows.

The question relevant to the lawsuit is: for the Plaintiff, Mrs. Joyce Walder, are lifetime concentrations of Libby Amphibole Asbestos (LA) in the dust created by BNSF activities substantial relative to the reference concentration?

I have three main responses regarding the analysis and opinions provided in Dr. Kind's report:

1. Qualitative comparisons

Dr. Kind provides no quantitative estimate for the relevant metric: for Mrs. Walder, concentrations and/or dose of LA in the dust created by BNSF activities. His report states strongly the importance of generating such an estimate. (For example, he writes, "The importance of calculating the dose cannot be overstated; in the absence of calculating a dose, opinions regarding human health risk are absent any

reasonable degree of scientific certainty.") Yet, he provides no calculation of the dose, nor of 70-year lifetime-average risks. Importantly, he does not estimate a lifetime average concentration to compare against the reference concentration (RfC).

This lack of quantitative analysis limits the Kind report's ability to investigate whether lifetime-average exposures to asbestos in the dust created by BNSF activities are substantial.

2. Spatial patterns of soil samples

The Kind report assumes that if air emissions from BNSF entered the community, then soil samples would reveal a strong, clear, and uniform spatial pattern: more-polluted soil nearer to BNSF. As described below, this assumption likely does not hold. In addition, Dr. Kind generated maps but did not perform quantitative spatial analyses to investigate this issue.

3. Use of an indoor model to understand conditions outdoors

Dr. Kind uses an indoor air pollution model to understand transport of pollution outdoors. That approach is incorrect. It leads Dr. Kind to the unreasonable conclusion that respirable particles only travel very short distances: less than 9 meters (30 feet) away from a source. He states, "asbestos fiber concentrations at 30 feet from the source would be approximately 1% or less of the source concentration". By 23 meters (75 feet) from a source, he says that essentially all pollution would be removed; he writes, "Modeled concentrations at 75 feet from the source were <0.0001 % of the source concentration". He says, therefore, that locations downwind (e.g., a residence 100 meters from the railroad) will experience zero pollution from BNSF activities.

His statements regarding the travel distance of respirable particles are incorrect. It is well known and well documented that respirable particles can travel longer distances. A well-known example is that smoke from a forest fire can travel many kilometers. In terms of asbestos, the literature contains multiple examples from outside Libby, of asbestos-related disease and death from environmental exposures to asbestos occurring kilometers away from an emission source. Dr. Kind's model incorrectly says that those distances are too far for asbestos particles to travel.

Below, I first describe the three points above in greater detail. Then, I offer several additional comments.

I reserve the option to alter my opinion based on additional information obtained through discovery or otherwise.

I received one expert report authored by Dr. John Kind, which was for the Plaintiff Mrs. Joyce Walder.

1. Qualitative comparisons

In his report, Dr. Kind feels strongly that a person must calculate a dose to evaluate a risk:

> *"The importance of calculating the dose cannot be overstated; in the absence of calculating a dose, opinions regarding human health risk are absent any reasonable degree of scientific certainty."* (page 33)
>
> "*without calculating a dose, the threat of toxicity and potential human health risks whether theoretical or actual obviously cannot be evaluated.*" (page 34)
>
> "*Thus, in order to quantify risk, the calculation of a dose must be performed.*" (page 34)

Despite these statements, Dr. Kind's report does not calculate a dose.

In my report, I use multiple methods to quantify Mrs. Joyce Walder's exposure to LA from BNSF activities, and thereby estimate lifetime-average exposure and compare it against the reference concentration, all of which demonstrate a substantial exposure to airborne LA dust from the BNSF railyard in downtown Libby. I did not see this type of quantitative analysis in the Kind report; thus, by his own proposed rule, he is unable to quantify Joyce Walder's risk of asbestos-related diseases resulting from the asbestos dust released from BNSF's railyard.

2. Spatial patterns of soil samples

Dr. Kind's opinion is that spatial analysis of the soil concentrations would contradict the idea that BNSF was an important source of air pollution:

> *"Spatial analysis of the presence of LA in soil samples collected from Libby, Montana and surrounding areas indicates widespread presence of LA in the area with no apparent pattern of LA concentrations originating from BNSF activities."* (page 5).

We note the following. (a) The Kind report fails to provide quantitative spatial analysis to support the claims above. The report presents some maps[1], but does not quantitatively investigate the question it raises (i.e., "do concentrations decrease at greater distance from the BNSF railyard?"). (b) The maps are drawn in a way that hinders seeing a patterns. First, points are plotted on top of each other, so the viewer cannot see all of the data; points lay hidden underneath other datapoints. Second, the scale used for the points (< 1.75% LA is the lowest displayed level in Dr. Kind's map, and most of the color scale is for pollution levels greater than 5% LA) makes the maps completely insensitive to the question posed: detecting (many years later) atmospheric deposition from emissions at the railyard. (c) Dr. Kind assumes that concentrations in soil in Libby would reflect concentrations in air in Libby, but supplies no evidence. His comments fail to account for people directly putting vermiculite into the soil, and also that grass or other material growing on soil would substantially reduce contaminated soil as a source of dust. (d) Dr. Kind has not calculated deposition rates for respirable LA or non-respirable LA, to see whether atmospheric deposition would dominate soil concentrations. In short, he has not tested whether his assumption (that Mrs. Joyce Walder's exposure to BNSF emissions is substantial only if soil concentrations are higher near the BNSF railyard) holds. In reality, only a small percentage of BNSF's respirable-LA

[1] Dr. Kind presents four maps of soil concentrations (his Figures 2,3,4,5; maps width: ~19 miles (Figures 2, 4) and ~4 miles (Figures 3,5).) His figures plot many thousands of points (he mentions 48,782 samples, of which 6,063 were detections), with many points plotted on top of each other.

emissions would deposit in Libby. (e) Available soil sampling was done in an ad-hoc manner (e.g., where there were concerns about soil pollution), and so likely does not represent overall spatial patterns. For example, samples might be more likely to come from atypical locations and so the resulting measurements might obscure the general spatial patterns one would see if looking more systematically. Soil sampling was not done in a purposeful manner to evaluate relative asbestos content of soil, was not performed in thoughtful, regular, or grid pattern and largely reflects EPA's investigation of self-reported presence of vermiculite on various properties in the area resulting from its historical disposal or use in gardens, lawns, and flower beds; as such, the dataset is made up of numerous irregularly spaced samples throughout the area including multiple results from single addresses and a complete absence of sampling from others. (f) LA dust from the railyard that deposited in Libby would have done so on the very tops of surfaces – for example, onto grass and vegetation, roads, buildings, and vehicles. The deposited LA dust would not necessarily have stayed in-place for multiple decades: it could easily have been re-entrained into the air or washed away via rain and snow. In contrast, where vermiculite was intentionally placed below the ground surface, it would be preserved for later identification during EPA soil-sampling efforts --- the sampling data that Dr. Kind plots in his maps. This aspect is another reason why the maps Dr. Kind generated, of soil concentrations in Libby during 1999 – 2009 (i.e., many years after the mine had closed and shipments had ceased), likely reflect other aspects (e.g., people adding asbestos to soil) and not concentrations or deposition of LA from railyard emissions.

(It is worth returning to Dr. Kind's statement that particles will almost never travel further than 9 meters from a source. Given this view, it is unclear why he would elect to search at locations beyond 9 meters from the railyard for evidence of railyard emissions.)

In summary, for multiple reasons, soil patterns in Libby would not exhibit the simple, clear spatial relationship with BNSF railyard emission that Dr. Kind seeks. Dr. Kind's report does not analyze the soil concentration data to look for spatial patterns, and the mapping layout and color-scale used make the maps unable to reveal a pattern, even if one existed. Maps of soil concentrations do not reflect airborne concentrations of LA from the BNSF railyard, nor attributable exposures relevant to the Plaintiff.

Text from the Kind report regarding this issue is as follows:

> *In cases of historical emissions of environmentally persistent particulates from defined locations such as the BNSF rail yard and track passing through Libby, one would expect to see a pattern of deposition of the contaminant in soil indicative of higher concentrations near an emission source that attenuate with distance away from the source. This has been demonstrated repeatedly in the scientific literature, and similar analyses have been performed previously for airborne particulates emitted from vehicle corridors, including patterns of lead deposition from roadways and coal dust from passing train cars (Hewitt and Rashed, 1991; Jaffe et al., 2015; Smith, 1976). If BNSF's operations within Libby, Montana were a major source of LA exposure to the community of Libby, a similar deposition pattern would be evident in the soils of the community of Libby."*
>
> (pages 13–14)

The approach put forward in this part of the Kind report reflects Dr. Kind's incorrect assumption that concentrations of LA from BNSF at Plaintiff's residences

are substantial if and only if Libby soil samples indicate higher concentrations near one BNSF emission locations (the railyard). Dr. Kind does not test this assumption; as mentioned above, his assumption is incorrect for multiple reasons. As described next, two of the three citations given by Dr. Kind (Smith; Hewitt and Rashed) highlight the need to test this assumption, since, as they point out, the assumption often does not hold. The third citation (Jaffe et al.) did not investigate spatial patterns (they studied only a single location) and so is not evidence in support of his assumption.

> *"Determining the movement of atmospheric Pb is particularly complex in urban areas due to multiple road sources, variable structure shapes, and complex wind patterns. Atmospheric modeling... may help accommodate this complexity."*
>
> (Smith, 1976, page 755).

> *"Estimation of the importance of motor vehicles as contributors of pollutants to the near-road environment relative to other, stationary, sources is required if the environmental impacts of vehicles are to be quantitatively assessed. Previous studies of this type have been attempted but in many cases have not adequately addressed the problems arising from there being a multiplicity of sources of pollutants in the environment. Here we describe the results of a 1 year measurement programme of deposition rates for some selected metals and polynuclear aromatic hydrocarbons in the vicinity of a major rural highway. The choice of sampling site allows the effects of vehicles on the near- road environment to be determined without interference from other pollution sources."*
>
> (Hewitt and Rashed, 1991, page 979; emphasis added)

The third article cited in the Kind report (Jaffe et al) did not investigate spatial gradients – these were fixed-site measurements at a single location – and thus is unable to support the statement from Dr. Kind.

> *"Measurements were made at a site between the towns of Lyle and Dallesport, Washington, in the Columbia River Gorge (approximately 45.7°N,121.2°W) between June 7 and August 10, 2014. The instruments were housed in a weather-proof enclosure, located about 10 m above and 20 m northeast of the rail line. Two video cameras were used; one took video of the trains at a 90 angle to the rail line, and one viewed the trains arriving/departing to the northwest. The rail line travels along the north side of the Columbia River. There were no roads between our site and the river. Our measurement site was approximately 200 m southwest of Washington Route 14, a state highway with light traffic."*
>
> (Jaffe et al., 2015, page 947)

In summary, in general the amount of a pollutant deposited in soil might or might not reflect the atmospheric concentration at that location; the references Dr. Kind cite further confirm the need to test this assumption. As described above, this assumption does not hold for the present case (LA emissions from the BNSF railyard, and soil samples in Libby).

3. Use of an indoor model to understand conditions outdoors

Based on an indoor air pollution model given in Donovan et al. (2011), Dr. Kind concludes that the BNSF railyard is far enough from the baseball fields and Plaintiff's residential locations that <u>any</u> emissions of LA the BNSF activities would fully attenuate to background concentrations (i.e., any nearby emissions would be

fully removed via deposition) prior to reaching these locations. The Kind report states,

> *"Ms. Walder's estate also alleges exposure from dust generated by passing trains at locations where she resided in Libby (see Figure 7 below). It is notable that each of these addresses is located a significant distance from the BNSF tracks (approximately 500 feet and greater). Donovan et al. (2011) analyzed the available scientific literature to model the dispersion and attenuation of asbestos fibers from a source and determine that asbestos fiber concentrations at 30 feet from the source would be approximately 1% or less of the source concentration and would further attenuate with increasing distance. Modeled concentrations at 75 feet from the source were <0.0001 % of the source concentration. Thus, it would take an extremely high LA fiber concentration at the railroad tracks (which is not supported by the available evidence) to result in even a measurable exposure at the any of Ms. Walder's Libby residences. For this reason, if any asbestos fibers were released from BNSF property, this would occur at such a distance from these residential locations that fiber concentrations would attenuate to background concentrations well before reaching the homes. Thus, there is no evidence that passing trains or emissions from vermiculite that may have been present along the railway resulted in elevated concentrations of asbestos fibers, and there would be no potential for any asbestos exposures in excess of background levels at these residences due to BNSF's activities."* (pages 42-43; emphasis added).

Dr. Kind concludes, based on the Donovan model, that the potential for exposures at 30 feet (9 meters) or at 75 feet (23 meters) from the source is nearly zero. At a distance of 500 feet (~150 meters), he concludes, if any asbestos fibers were

released from BNSF property, they all would be removed well before reaching the homes. He further states that there is no potential for any asbestos exposures at the residences attributable to BNSF's activities.

As described next, the Donovan model is inappropriate for use here for several reasons: (A) the model aims to describe transport indoors, yet the relevant transport (i.e., from BNSF emission sources to Plaintiff's residences) is in outdoor air. (B) The methods Donovan et al. used to derive their model are flawed, as described by Egilman and Schilling (2012). If the Donovan model is applied to outdoor conditions, the results are inconsistent with (C) basic knowledge in atmospheric sciences, that respirable particles can easily travel many kilometers in outdoor air, (D) standard modeling practice in air quality engineering, (E) the literature documenting mesothelioma cases and deaths attributable to asbestos emissions from far away (hundreds of meters, or kilometers), and (F) common experience with respirable particles, such as smoke from a forest fire.

(A) The Donovan model aims to describe transport indoors, not outdoors.

Donovan et al. are clear and explicit that they aim to model indoor, not outdoor, air. They refer to their model as an "indoor air eddy diffusion analytical model" (pages 54-55). They include indoor considerations such as pollutant interactions with walls (page 55) and the length, width, and height of a rectangular room (page 55).

> *"Because of the inherent variability associated with comparing bystander to worker air concentrations from simulation studies and workplace surveys, an indoor air eddy diffusion analytical model for particulate emissions was applied for a simplified scenario to provide*

a point of comparison to the bystander:worker ratios derived from the published data."

(Donovan et al., 2011, page 54-55)

"Specifically, the indoor air eddy diffusion models developed by Drivas et al. (1996) and Keil (2000) for particulate emissions were used to estimate the airborne concentrations over time for a one time, point source release of particles (in this case, fibers). These models are based on the same equations, except that the Drivas et al. (1996) model also accounts for surface deposition and reflection off of room walls. As such, the Drivas et al. (1996) model was considered to be more representative of a typical work environment".

(Donovan et al., 2011, page 55).

"It should be noted, however, that this model is relatively simplistic, in that it is based on a single worker in a single room with typical room ventilation (dilution ventilation). We did perform one exercise where net advective airflow was included in the models (data not shown), but the impact varied widely depending on where the ventilation source was placed relative to the bystander (i.e., directly upwind or along an axis perpendicular to the bystander, creating a crosswind) (Keil et al., 2009). It was determined that for purposes of this assessment, a simpler model as preferable. As such, the models used in this analysis are not be able to account for situations in which there may be local exhaust ventilation, open windows, large body cooling fans, or high dilution ventilation (such as in some hot workplaces, for example ship boiler rooms or steel mills)."

(Donovan et al., 2011, page 69)

There are strong differences between indoor and outdoor environments (e.g., airflow rates; presence of surfaces such as walls, floors, ceilings, furniture, etc.). If the goal is to understand outdoor environments, it is not appropriate to use a model and results for indoor environments without accounting for the differences between indoors and outdoors.

(B) The methods Donovan et al. used to derive their model are flawed, as described by Egilman and Schilling (2012).

Egilman and Schilling highlight several problems with the approach used by Donovan et al. Two of the problems that they discuss are (i) the model employed by Donovan et al. is contradicted by the empirical data they (Donovan et al.) analyzed, and (ii) Donovan et al. arbitrarily cap the bystander:worker concentration ratios to better suit their analysis.

> *"The authors' conclusions are not supported by the reviewed literature, but derive wholly from an indoor air dispersion model that was developed for asbestos litigation defense (Drivas et al., 1996). The authors give primacy to this model despite the fact that actual workplace measurements and workplace simulation studies contradict the results generated by the mathematical model. In fact, their own analysis of workplace and simulation studies found no relationship between distance from an asbestos source and exposure level: "No discernable trends were evident when bystander:worker ratios were plotted independently against distance from the primary worker" (2011, page 64–65). All the evidence indicates that exposure concentration depends on many complex variables, such as ventilation*

> *conditions and task. Distance from a point source or primary worker is an unreliable predictor of bystander exposure. This explains why the ratio of bystander:worker concentrations ranges from 0 to >2.5 in Donovan et al.'s analysis (see Figure 1)."*
>
> (Egilman and Schilling, 2012, page 169)

> *"Donovan et al. arbitrarily cap the bystander:worker concentration ratios at 1. A ratio greater than 1 means the bystander exposure is higher than the worker's direct exposure that is the only "source" of the bystander exposure. If Donovan et al.'s analysis is valid, ratios above 1 are impossible because they mean that that bystander exposures are higher than those of the worker "source."*
>
> (Egilman and Schilling, 2012, page 169)

(C) If the Donovan model is applied to outdoor air, the results are inconsistent with basic knowledge in atmospheric sciences, that respirable particles can easily travel many kilometers or further in outdoor air.

The approach I used to calculate the flow of respirable particles in outdoor air shows that particles can, and did, move from BNSF facilities to residential and other locations in Libby. In my model, wind speed and direction play an important role. In the model Dr. Kind uses, particles generally cannot travel >9 meters. In Dr. Kind's model, wind speed and direction are not taken into account. Here are a few quotes highlighting the basic knowledge in atmospheric sciences that respirable particles settle slowly enough in outdoor air to travel far distances with the wind (i.e., could easily be transported from BNSF facilities to residences and other locations in Libby).

"Once suspended, LA Asbestos moves by dispersion through air. LA asbestos concentration will be highest near the source and will decrease with increasing distance. In outdoor air, wind speed will determine direction and velocity of LA asbestos particle transport."

(US EPA 2014a, page 5-2, emphasis added)

"The theoretical times needed for [fibers 5, 2, and 1 µm in length with a 5:1 aspect ratio] to settle from a 3 meter (9 ft) ceiling are 4, 20, and 80 hours in still air. Turbulence will prolong the settling and also cause reentrainment of fallen fibers."

(US EPA 1978, page I-2-3, emphasis in original)

"... During the time that the [asbestos] fiber remains airborne, it is able to move laterally with air currents and contaminate spaces distant from the point of release. Significant levels of contamination have been documented hundreds of meters from a point source of asbestos fibers, and fibers also move across contamination barrier systems with the passage of workers during removal of material."

(US EPA 1978, page I-2-5, emphasis added)

Particles "can stay in the air for days to weeks or longer."

(Jacobson, 2002, page 121, emphasis added)

The Jacobson (2002) quote is from a college-level textbook called "Atmospheric Pollution: History, Science, and Regulation". The textbook shows quantitatively (Table 5.4, page 122) that respirable particles settle slowly. For example, a typical time for respirable particles to settle 1 yard is several hours or longer. (That time-scale from Jacobson (2002) is consistent with time-scale given above from US EPA

(1978, pages I-2-3 and I-2-5).) Even when wind speeds are very slow (e.g., 1 mile per hour), the several-hour settling duration is sufficient for particles to be transported with the wind across Libby (e.g., from BNSF facilities to a Libby residence). For example, if a particle takes 4 hours to settle, and the wind is very slow (e.g., 1 mile per hour), then the particle would travel 4 miles before settling. If the wind is moving at a more typical speed (e.g., 3 miles per hour), then with a settling time of 4 hours, the particle would travel 12 miles.

In contrast, Dr. Kind says that >99% of respirable particles settle within 9 meters. If the windspeed is 3 miles per hour, to travel 9 meters takes 7 seconds. Thus, Dr. Kind is stating that >99% of particles settle within seconds of being released. (If the windspeed were slow (1 mile/hour) instead of 3 miles/hour, the settling time to travel 9 meters would be 20 seconds instead of 7 seconds.) That assertion by Dr. Kind is incorrect, and is inconsistent with basic knowledge in atmospheric sciences. Respirable particles take hours or days to settle, which is why they can travel far distances (kilometers).

(D) Applying the Donovan model to outdoor air is inconsistent with standard modeling practice in air quality engineering.

For airborne particles in the environment, it is a generally accepted scientific method to quantify their deposition and removal using a settling velocity. The quotes above, from the US EPA and from a college textbook (Jacobson, 2002), indicate that settling velocities for respirable particles are relatively slow: hours or days for a particle to fall a few meters. Dr. Kind's approach, which does not use a deposition velocity, is inconsistent with standard modeling practice in air quality engineering. In my expert report, I used a settling velocity to calculate that while traveling with the wind, from the railyard to the exposure locations in Libby

(residences; recreational activities), the proportion of particles that settle would be small.

(E) Applying the Donovan model to outdoor air yields results that are inconsistent with the literature documenting mesothelioma cases and deaths attributable to environmental asbestos from emissions far away (hundreds of meters, or kilometers).

As described in my report, multiple studies document increased risk of asbestos-related disease and deaths from asbestos-related disease, at distances of hundreds or thousands of meters from an emission source (e.g., Newhouse and Thompson, 1965; Magnani et al., 1997, 2000, 2001; Kurumatani and Kumagai, 2008).

(F) Applying the Donovan model to outdoor air yields results that are inconsistent with common experience with respirable particles, such as smoke from a forest fire.

Common examples of respirable particles include forest-fire smoke, and regional haze that can limit visibility at national parks. These particles are widely known to travel far distances – many km or more. The Donovan model says that respirable particles can travel less than 9 meters from the source (less than a single "down" in football!); that claim violates common experience with respirable particles.

4. Additional Comments

In addition to the main comments above, I have several additional comments, given next.

a. Lack of reference concentration (RfC)

In considering the environmental exposures to ambient air experienced by Mrs. Joyce Walder, the Kind report incorrectly ignores the established reference concentration (RfC), and instead offers the opinion that one should compare to other values: standards for workers, concentrations from a single journal article, or dose rather than concentration. For example, here is text from the Kind report comparing to standards for workers:

> *"Available air sampling data from W.R. Grace workers indicates that, by the early 1980s, TWA fiber exposures for W.R. Grace employees working at the W.R. Grace rail car loading facility averaged 0.5 f/cc. This is well below the OSHA PEL-TWA of 2 f/cc that was applicable at the time (Amandus et al., 1987a). The authors also noted that, "Exposures during 1977-1982 in most areas were less than 1.0 f/cc, and in the mill ranged from 0.6-1.0 f/cc." Thus, in the late 1970s through the early 1980s, there was no information to suggest that non-W.R. Grace workers would have been over-exposed to asbestos, since they were not involved in expanding vermiculite concentrate and were expected to have exposures than W.R. Grace workers at the mine." (page 12).*

OSHA PELs (Permissible Exposure Level) aim to establish standards for worker exposure. They are not the appropriate standard for environmental exposure to asbestos, for many reasons, including: (A) Workers are compensated for their work. Their salary may reflect the added risk. The general public are not paid to accept added risks from pollution. (B) Workers are, on average, healthier than the general public. Thus, one would expect concentration standards would be different for the public than for workers. (C) Workers can use protection equipment; in contrast, one does not expect that the public have to wear protection equipment on a daily basis to avoid added risks from pollution. (D) Exposures occur over a much shorter duration

for workers than for environmental exposure to the public (i.e., workers are exposed only during work, whereas environmental exposures may happen for a larger number of hours per week or per year, and for a larger total number of years during a lifetime). (E) Many PELs are not actually protective of health. The OSHA website that lists PELs (www.osha.gov/annotated-pels) opens with the following statement: "OSHA recognizes that many of its permissible exposure limits (PELs) are outdated and inadequate for ensuring protection of worker health." (emphasis added.) The website also says, "Industrial experience, new developments in technology, and scientific data clearly indicate that in many instances these adopted limits are not sufficiently protective of worker health" (emphasis added); as a result, exposures "may be hazardous to workers, even when the exposure levels are in compliance with the relevant PELs". (emphasis added).

The report of Dr. Julie Hart references the following statement from the EPA:

> *"It is important to recognize that occupational exposure standards for asbestos are not generally applicable or protective for residents or workers in non-asbestos environments because occupational standards are intended to protect individuals who a) are fully aware of the hazards of the occupational environment, b) have specific training and access to protective equipment such as respirators and/or protective clothing and, c) participate in medical monitoring (USEPA 1995). None of these conditions apply to residents or to workers at typical commercial establishments. Thus, simple compliance with the OSHA standards is not evidence that exposure levels are acceptable in a home or in a nonasbestos workplace. Indeed, risks to residents or workers occur at exposure levels substantially below the OSHA workplace standards."* (EPA 2001a).

Dr. Hart further notes that OSHA permissible exposure limits have changed over time, but it has consistently been recognized that injurious exposures can occur at levels below the PEL.

In contrast, the RfC for LA is established and reflects substantial investigation and weighing of available evidence; it provides a more-relevant comparison point for the environmental exposures in Libby than do the alternative approaches proposed in the Kind report. The EPA Toxicology Report (2014b) "reviews the potential hazards, both cancer and noncancer health effects, from exposure to LAA and provides quantitative information for use in risk assessments: an RfC for noncancer health effects and an inhalation unit risk (IUR) addressing cancer risk." (page 1-1). The EPA uses the Libby-specific RfC and IUR obtained from the Toxicology Report "to quantify potential human health risks from exposures to LA" throughout Libby and the surrounding communities (US EPA 2015, page ES-1). I used this same risk value to compare Plaintiff's health risk from specific BNSF activities. The RfC accounts for and reflect many studies and is more appropriate to use than the small number of studies Dr. Kind selected.

b. Potential mis-citation

The Kind report includes the following statement:

> *"In the summer of 1981, an employee of W.R. Grace performed an air monitoring analysis at one of the tracks during running activities because it was known to the company that the material used to build the tracks contained "a concentrated level of tremolite" (Quivik, 2002). This employee detected concentrations as high as 1.0 f/cc when the track was being used by large numbers of people".* (page 8)

The citation given does not support the statement. Specifically, Kind gives a concentration ("as high as 1.0 f/cc"), but in the citation (Quivik, 2002) I was unable to find the concentration measurements which Kind references (see especially Quivik, 2002 page 46-47). (Additionally, as mentioned above, I have not seen information in Dr. Kind's report that quantifies exposure or dose.)

To my understanding, (1) the actual July 1981 report by W.R. Grace Industrial Hygienist, Randy Geiger, did not detect concentrations as high as 1.0 f/cc, and instead reports two sample results of 0.14 f/cc and 0.22 f/cc, (2) Dr. Kind has indicated that the material used to build the tracks was provided to the Libby Public School system between 1976 and 1981, and (3) there is no indication that Ms. Walder returned to the high school or middle school well after her graduation therefrom to use the school sports facilities, so this issue is not directly relevant to Mrs. Walder's exposures (especially, to Mrs. Walder's exposures from emissions at the BNSF railyard).

c. Description of BNSF railyard evaluation and cleanup

The Kind report states,

> *"As the EPA was evaluating various sites around Libby to determine whether asbestos was present, BNSF entered into a voluntary consent decree with the EPA to determine if remediation of its properties were necessary. Although the vast majority of samples taken on BNSF property came back within normal limits, BNSF nevertheless agreed to remove 18,000 tons of soil that may have contained asbestos. BNSF also voluntarily removed 14,000 feet of track as part of its remediation efforts. Soil was removed using HEPA filtered vacuum trucks and small excavators. Post-response sampling was conducted to determine risk for potential inhalation exposure during future rail maintenance on the property. Air samples were collected, wherein no asbestos structures were detected in samples using the ISO 10312 method (Kennedy/Jenks Consultants, 2014)."* (page 10)

Kind's depiction of railroad characterization and cleanup is misleading. (1) The terms "voluntary" and "if remediation.. were necessary" suggest that clean-up was optional, which is not the case. The railyard had visible vermiculite and extensive areas of LA contamination. This contamination, in close proximity to Libby, represented a large threat to public health; cleanup was required, not optional, and EPA mandated the cleanup. (2) The initial cleanup "using HEPA-filtered vacuum trucks and small excavators" was insufficient and/or ineffective, and was promptly stopped by the EPA when clearance samples showed consistently high LA content (US EPA 2014a). (3) The phrase, "Although the vast majority of samples taken on BNSF property came back within normal limits…" fails to mention that samples were not collected in the most-polluted parts. According to EPA, areas with visible vermiculite were not sampled (presumably since they were already known to be contaminated). Available evidence suggests that vermiculite was present on the railyard surface as well as underneath. This was true during the era of active vermiculite shipments, with worker testimony describing the railyard as being covered in visible vermiculite, and in 2001, when sampling and remediation began and a large portion of the railyard was flagged as visible vermiculite for removal (US EPA 2014a). According to the EPA's Initial Pollution Report (2003), the dust at the railyard contained 2% – 5% LA. (4) In the quote above from the Kind report, the last sentence refers to air sampling after remediation, yet no dates are given for sampling. To my understanding, the target analytical sensitivity of the ISO 10312 method during sampling was 0.0024 f/cc (i.e., 2,400 f/m3), with actual detection limit varying by airflow (US EPA 2014a, page 2-24). That target analytical sensitivity for these samples is ~27× higher than the RfC (90 f/m^3, which equals 0.00009 f/cc) (US EPA 2014b). Therefore, non-detection is not necessarily indicative of "safe" LA concentrations.

d. Soybean oil treated vermiculite concentrate

The Kind report gives, in total, one sentence stating that W.R. Grace began treating vermiculite with soybean oil (SBO) as a dust suppressant:

> *"As discussed below, W.R. Grace began adding soybean oil to vermiculite concentrate in the 1983-1984 timeframe, which resulted in substantial decreases in fiber release that would further reduce potential exposures."*
>
> (page 12)

The Kind report does not provide further information. The sentence in the Kind report states that the topic will be "discussed below", but I did not see further information or discussion elsewhere in the report. I also did not see citation in the Kind report supporting this one sentence.

I reviewed information pertaining to SBO treatment efforts by W.R. Grace, but did not find support for Dr. Kind's statement. Specifically, I reviewed two 1983 memos from W.R. Grace regarding a November 28th, 1983 meeting "to discuss the data base necessary to support removal of the asbestos placard from vermiculite concentrate rail cars." (see W.R. Grace - November 1983 memorandum and W.R. Grace - December 1983 memorandum, located in Appendix A below). These documents do not indicate that W.R. Grace has begun applying SBO to vermiculite concentrate as a regular practice, but rather that BNSF was exploring whether, for specific end uses (e.g., "wallboard customers"), SBO treatment is capable of reducing LA concentrations sufficiently to allow for the removal of their existing asbestos warning placard. In fact, the December 1983 memorandum, in summarizing conclusions from the meeting, states that: "No testing will be conducted, for now, where the concentrate is expanded. Testing will be delayed until a complete switch can be made at Libby to treat all concentrate. At that time, a

'worst case' situation will be evaluated." The memorandum goes on to state that where concentrate is expanded, "actual personnel exposures would depend not only on handling of Unexpanded SBO Concentrate, but also on the expanding process and dust control effectiveness." In summary, these documents do not supply evidence supporting Dr. Kind's sentence.

I also reviewed invoices showing 25 shipments of vermiculite concentrate to the Robinson Insulation Company from 1985-1988, with five of these shipments indicating "oil treated" vermiculite. (See Robinson Insulation Co Invoices, located in Appendix A.) These five shipments comprised 20% of the total shipments and 23% of the volume shipped (482.4 tons of SBO treated out of 2059 tons total), however, these "oil treated" shipments all occurred in 1985 (out of 16 total shipments in 1985) and just to one customer, suggesting that SBO treatment was not a widespread practice for vermiculite concentrate. Finally, I have reviewed a Material Safety Data Sheet for "non dust suppressed" vermiculite concentrate, dated 04/13/1992, suggesting that even within the last years of vermiculite shipments out of the Libby railyard, shipments without dust suppression continued. (See W.R. Grace MSDS - April 1992, located in Appendix A.)

As cited in my report, worker testimony mentions large dust clouds each time a through-train passed by. This worker testimony contradicts Dr. Kind's statement, that beginning in the 1983-1984 timeframe, SBO treatment by W.R. Grace "resulted in substantial decreases in fiber release that would further reduce potential exposures."

Perhaps most importantly, these SBO treatment experiments and limited use of this method occurred years *after* Mrs. Joyce Walder had moved away from Libby. They

therefore are largely immaterial to an assessment of Mrs. Walder's exposure to LA dust from the BNSF railyard.

Altogether, these documents do not provide evidence that SBO treatment of vermiculite was fully implemented by W.R. Grace, or occurred for more than a brief period of time, or occurred during years relevant to Mrs. Joyce Walder. Therefore, my opinions as contained in my report are unchanged by the one-sentence statement in Dr. Kind's report and by the documents reviewed above regarding application of SBO.

e. Respirable LA content of vermiculite concentrate

The Kind report states,

> *"A 1980 W.R. Grace memorandum indicates that by this time "Grace, by various and detailed analytical procedures, has been able to assure itself that the percent concentrations of fibrous tremolite contamination associated with its expanded vermiculite products range from a point substantially below 1% down to the limits of detectability of this technique" (Williams, 1980). This is reflected in the placards W.R. Grace apparently intended to place on the vermiculite concentrate railcars, which stated "Vermiculite concentrate may contain up to 1.0% Asbestiform Tremolite (CAS # 14567738)."* (page 13)

First, the quote above that cites Williams (1980) specifically refers to "expanded vermiculite products", however, vermiculite transported through Libby and deposited in the BNSF railyard generally was unexpanded vermiculite concentrate. Thus, the numeric value for expanded product is not directly applicable to most LA in the BNSF Libby railyard. Second, the passage from Dr. Kind references placards

that W.R. Grace "apparently intended to place" on railcars. This "apparent intention to place" does not provide specific measurements, nor does it provide scientific sampling from a third-party. A 1980 report from the EPA states “after mining, vermiculite is processed to remove impurities; however, attempts to remove all contaminants have been unsuccessful and tremolite asbestos remains as a contaminant in the vermiculite obtained from the Libby mine at a concentration of at least 1%” (US EPA 1980, page 1). A detailed and independent third-party analysis of LA content of the vermiculite concentrate was conducted by Atkinson et al. (1982) and found that the concentrate typically contained more than 1% respirable LA by weight, with an average respirable LA content of 3.5%.

EPA measurements showed that just prior to remediation, the railyard soil contained 2% – 5% LA; this contamination level was many years *after* the mine closed and active handling of vermiculite in the railyard had ceased, suggesting that during the relevant years (exposure years for the Plaintiff, which were when vermiculite was actively being handled in the railyard) LA concentrations in the railyard were at least that high, and possibly higher. According to the Montana State Supreme Court, BNSF does not dispute “that the railyard testing revealed asbestos soil levels of 2 – 5% and extensive areas of visible vermiculite.”

f. Health outcomes and risks versus “reason to suspect”

Dr. Kind states,

> *“BNSF would not have had reason to suspect that transport of vermiculite concentrate by rail would have any potential to result in asbestos exposures.”* (page 13)

The direct goal of risk assessment calculations here is to inform health outcomes and health risks, rather than investigate “reasons to suspect.”

(However, if considering "reasons to suspect", one should note the documentation, going back many decades, that asbestos emissions to the environment can cause disease even for people living kilometers away. Also, to my understanding, by the early 1970's, OSHA required testing of any workplace where asbestos fibers may be released. Had BNSF complied with this requirement or otherwise performed necessary asbestos testing, BNSF would have had ample "reason to suspect that transport of vermiculite concentrate by rail would have any potential to result in asbestos exposures.")

(Dr. Kind's statement above refers to "transport of vermiculite". Emissions from the BNSF railyard reflect not only emission from the *transport* of vermiculite by rail, but also from *owning land*: managing and maintaining the railyard without cleaning or removing the fallen vermiculite, not carrying out wetting or other dust-suppression, etc.)

g. Potency of LA

The Kind report provides the following statements on the potency of LA:

> *"Multiple studies have addressed the cancer and non-cancer potency of LA in both humans, laboratory animals and in cultured cells. Multiple analyses have investigated the potency of LA for the induction of both lung cancer and mesothelioma (Garabrant and Pastula, 2018; Moolgavkar et al., 2010; Berman and Crump, 2008; Price, 2008). The results of these analyses indicate that the potency of LA to induce both lung cancer and mesothelioma are less than that of commercial amphiboles and in some cases are less than the potencies seen in some cohorts primarily exposed to chrysotile asbestos. It is notable that potency comparisons for mortality from non-malignant*

> *respiratory disease have not been conducted due to a lack of risk estimates in non-LA exposed cohorts, however the potency factor calculated by Moolgavkar et al. (2009) would suggest a potency for mortality from non-malignant respiratory disease that is similar to the corresponding potency for lung cancer (Moolgavkar et al., 2009). Thus, epidemiology studies of occupational cohorts with high cumulative exposures to LA indicate that the carcinogenic potency of LA for both lung cancer and mesothelioma is less than that of commercial amphiboles."* (page 20)

The EPA Toxicology Report (2014b), titled "Toxicological Review of Libby Amphibole Asbestos", provides a thorough and well-vetted analysis of the available evidence for Libby Amphibole Asbestos. It offers appropriate reference concentrations for understanding and interpreting risks from environmental exposure to Libby LA.

h. Threshold dose

Dr. Kind states,

> *"For noncancer effects, risk estimates have been largely developed under the assumption that a threshold dose does exist below which no adverse effect would be expected (GAO, 2001; Klaassen, 2013; USEPA, 2012; Williams et al., 2000)"* (page 33).

> *"Because the dose determines the nature, intensity, and likelihood of the adverse health effect observed, there will be both acceptable "safe" doses/exposures and "toxic" doses/exposures for all chemicals."* (page 34).

The Hart report states that available evidence indicates that there is no "safe" level of exposure to asbestos. (Even when a threshold exists, it is possible that everyone in a community is exposed above the threshold; in this case, no one in the community is breathing "safe" / "acceptable" air.)

Regardless, to my understanding, an analysis by Dr. Ronald Dodson of Joyce Walder's lymph node tissue, taken from adjacent to her lungs, demonstrates Mrs. Walder's exposure to substantial levels of airborne LA.

i. Measured concentrations of LA at the railyard

Dr. Kind states,

> *"There is no available evidence demonstrating increased airborne LA concentrations in and along the rail road tracks or railyard during this time period. Air sampling was conducted in the Libby railyard during the spring of 2001. These samples were collected prior to the remediation of the railyard during maintenance of way activities, which would have the effect of generating airborne dust from the track area. Airborne concentrations of asbestos fibers in the Libby railyard during these sampling efforts were extremely low.*" (page 42).

Despite these measurements being prior to remediation, they are not necessarily relevant to concentrations when the mine and shipments were active and vermiculite concentrate was being brought into the yard on a daily basis. Additionally, there is a discrepancy in the numbers he reports here and the monitoring data I am aware of: I count 75 personal samples (Kind report 71), 11 detects (Kind report 9), and the highest detection being 2.6 f/cc (Kind report 0.092 f/cc). I am not sure how Dr. Kind came to his count of samples or why he omitted the 2.6 f/cc. The highest detection value of 2.6 f/cc is ~29,000× higher than the RfC. The lower concentration of 0.092 f/cc reported by Dr. Kind is still ~1,000× higher than the RfC. These

concentrations do not support Dr. Kind's claim that "time spent by Ms. Walder near the railroad tracks or recreational activities that allegedly put her in proximity to the railroad tracks would not have yielded asbestos exposures in excess of background levels related to or caused by railroad activity."

The 2001 sampling was conducted by BNSF and lead by their industrial hygienist. There is a strong incentive for them not to find exceedances. "Several area samples collected in April exceeded the OSHA STEL of 1.0 f/cc. These samples were collected on the ballast regulator while it was performing brooming activities within the Libby Yard. My recommendation is to keep all BNSF MOW [maintenance of way] personnel out of the Libby Yard to the extent possible." Area samples were are as high as 14 f/cc (~155,000× RfC to ARD) (see letter from BNSF industrial hygienist Mark Mitchell to BNSF railway roadmaster Arne Olson and letter from BNSF industrial hygienist Mark Mitchell to BNSF Railway Trainmaster Rico Montini). There are additional letters from Mark Mitchell to individual employees describing the results of the sampling, the PPE they were wearing, and how worker behavior and the use of PPE can reduce dust exposure (see Letters from BNSF Industrial Hygienist Mark Mitchell to BNSF Employees - June 2001, located in Appendix B). These letters suggest that BNSF employees were aware of the asbestos contamination in 2001; they may have acted accordingly. On these sampling days in 2001 (which was after greater and more widespread awareness of LA contamination in Libby), workers might have been working in such a way so as to reduce their dust exposure, or otherwise performing their duties in ways that differed from typical employees in earlier years. If so, these estimates from 2001 are even less representative of exposures during the 1960s and 1970s when vermiculite handling was active. (In addition, these year-2001 measurements are from years after the Vermiculite mine had closed, and active handling and shipment of Vermiculite had ceased.)

j. High concentrations and prolonged exposures needed to cause disease

Dr. Kind states, "Mesothelioma is a dose-dependent disease that requires prolonged exposures to high concentrations of asbestos in order to develop in an exposed individual. Ms. Walder had no such exposures from BNSF's activities." (page 6).

I have a few comments about that text. Regarding the phrase "no such exposure", Dr. Kind's report offers no quantitative estimate of the exposure.

Regarding the phrase, "high concentration": the RfC is relatively small (90 fibers/m^3; based on a conversion of 1 microgram = 33,000 fibers, the RfC corresponds to ~3 nanograms/m^3, i.e., 0.000000003 grams/m^3), reflecting that asbestos is highly toxic. Even very low concentrations can cause health effects.

Regarding the phrase "prolonged exposure", exposures do not need to be prolonged. My estimates and those that I cite, and even simple arithmetic, indicate that even a few days can put you over the RfC. A 1982 report by Office of Toxic Substances states that even *one or two days* of exposure to asbestos can cause deadly disease; specifically, the report says, "Mesothelioma, a 'marker disease' (disease that is always, or nearly always, caused by a particular agent) for asbestos exposure, has occurred in persons with exposures as brief as <u>one or two days</u>" (page 12; emphasis added).

(In this way, asbestos is similar to carbon monoxide and snake venom – two other substances for which even small amounts can be deadly. Toxic agents do not necessarily require "prolonged exposure to high concentrations" to have health effects.)

To my understanding, an analysis by Dr. Ronald Dodson of Joyce Walder's lymph node tissue, taken from adjacent to her lungs, demonstrates Mrs. Walder's exposure to substantial levels of airborne LA.

k. Use of the RfC versus understanding of relative toxicity

Dr. Kind writes, "The carcinogenic potency of LA is less than that of commercial amphiboles, and the toxic potency of LA is similar to or less than that of amosite asbestos." (page 6). However, EPA's RfC and IUR are specific for LA --- that is, the RfC that I used is the value that applies to LA.

l. Vermiculite dust emissions from passing trains.

Dr. Kind states,

> *"Thus, there is no evidence that passing trains or emissions from vermiculite that may have been present along the railway resulted in elevated concentrations of asbestos fibers, and there would be no potential for any asbestos exposures in excess of background levels at these residences"* (page 43).

In my expert report I provide quantitative modeling that estimates the impacts of LA dust kicked up by trains passing through the Libby railyard. This modeling indicates substantial contributions to the Plaintiff's lifetime LA exposure, attributable to railyard-related emissions. That modeling reflects the amount of wind turbulence behind a train, which can kick up LA dust, as well as worker testimony describing visible clouds of LA dust when through-trains passed by, and the amount of LA that was brought to landfill during the remediation (more than 18,000 tons).

m. Interpretation of RfC

Dr. Kind states, "Often, human exposures that exceed an RfD or RfC are mistakenly misinterpreted as unacceptable or unsafe." (page 32).

Dr. Kind's comments aim to contradict a central purpose of the RfC: to identify human exposures that are unacceptable or unsafe.

As described in my report, the State of Montana says that human exposures that exceed an RfC are "not allowed", "not appropriate", and yield "unacceptable" risks. They also consider RfCs to be a "may not exceed", and a "[do] not exceed" concentration.

n. Time Mrs. Walder spent at the baseball fields

Dr. Kind says "Ms. Walder also described being around the downtown baseball fields. In her CARD questionnaire, Ms. Walder indicated that she spent about 3 hours per day, 20 days per year, for 20 years playing in or watching games at the downtown baseball fields (Figure 7)" (page 44).

These values given by Dr. Kind would total 1,200 hours at the baseball field (i.e., 3 × 20 × 20). In my report, I used a value (240 hours) that is 5 times smaller. If I were to use the value Dr. Kind mentioned, from the CARD questionnaire, that change would increase the estimate lifetime average exposures from being near the baseball field by a factor of 5.

This aspect further supports that I conservatively under-estimated Mrs. Walder's lifetime average exposure.

o. Causal criteria in epidemiology versus substantial contributing factor

Dr. Kind states "Potential alternate causes of the medical condition (confounders) can be adequately ruled out (eliminating alternative possible etiologies for the condition)." (page 42).

To my understanding, Dr. Kind is referring here to scientific understandings of causation (e.g., Bradford Hill criteria). Those criteria may or may not universally apply for this specific lawsuit; for example, the criteria might differ for "substantial contributing factor" versus for irrefutable proof of a single cause.

This difference is further emphasized by Dr. Kind's references to "these causation criteria for evaluating epidemiological data" and "the method by which epidemiological evidence is evaluated." (page 19). The causal criteria for evaluating epidemiological data and epidemiological evidence may differ from the standards for evaluating exposure to BNSF emissions in the context of this lawsuit.

Also, to my understanding, an analysis by Dr. Ronald Dodson of Joyce Walder's lymph node tissue, taken from adjacent to her lungs, demonstrates Mrs. Walder's exposure to substantial levels of airborne LA.

p. Interpretation of soil samples

Dr. Kind states, "Although the vast majority of samples taken on BNSF property came back within normal limits, BNSF nevertheless agreed to remove 18,000 tons of soil that may have contained asbestos." (page 10).

As described in my report, the samples (specifically, the pre-remediation samples) were intentionally taken from less-contaminated locations. At the time (i.e., prior to remediation), EPA reports documented visible vermiculite across the railyard. Locations with visible vermiculite were not sampled. Thus, the pre-remediation

samples that were taken were not a random sample, nor were they there to determine whether the railyard site was polluted.

EPA measurements showed that just prior to remediation, the railyard soil contained 2% – 5% LA; this contamination level was many years *after* the mine closed and active handling of vermiculite in the railyard had ceased, suggesting that during the relevant years (exposure years for the Plaintiff, which were when vermiculite was actively being handled in the railyard) LA concentrations in the railyard were at least that high, and possibly higher. According to the Montana State Supreme Court, BNSF does not dispute "that the railyard testing revealed asbestos soil levels of 2 – 5% and extensive areas of visible vermiculite."

q. When was it known that environmental exposures to asbestos can be harmful

Dr. Kind states, "there was no information to suggest that workers other than those involved directly in the mining, processing, or expansion of Libby vermiculite were receiving LA exposures sufficient to cause an increased incidence of adverse health effects." (page 11). He then states, "the available historical information indicates that LA exposures from activities other than directly mining, milling, or expanding vermiculite ore and concentrate were not deemed to be potentially hazardous until the late 1990s and more so by the early 2000s." (page 12)

However, as mentioned above and documented in my report, research showing health effects from environmental exposure to asbestos, including at kilometers or further from the source, goes back several decades prior to the dates Dr. Kind mentions. For example, a 1965 study found elevated rates of disease from environmental exposures in Finland (Laamanen et al., 1965; "Observations on Atmospheric Air Pollution Caused by Asbestos", Annals of the New York Academy of Sciences).

Thus, the statement that "there was no information to suggest" a risk of adverse health effects is incorrect. Also, to my understanding, by the early 1970's, OSHA required testing of any workplace where asbestos fibers may be released. Had BNSF complied with this requirement or otherwise performed necessary asbestos testing, it would have had "information to suggest" that BNSF workers and even non- BNSF workers (i.e., Libby residents) "were receiving LA exposures sufficient to cause an increased incidence of adverse health effects".

r. Type of railcar used

Dr. Kind refers to the type of railcar used by BNSF to haul vermiculite as a "hopper car". (For example, on page 10 he refers to "Hopper cars staged on the railway…" and "…the vermiculite-containing hopper cars...".)

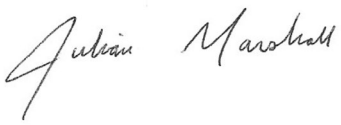
To my knowledge, for transporting asbestos, BNSF did use hopper cars; they also at other times used boxcars. (To my understanding, average leakage/spillage rates of vermiculate from a train car was higher for box cars than hopper cars; reasons include that boxcars were side loaded, which based on historical reports and video was a dusty process, and that boxcars had more holes, cracks, and leaks.)

s. Location within the railyard of vermiculite, and responsibility for cleanup

Dr. Kind states, "During rail shipment of vermiculite through Libby, piles of vermiculite would occasionally accumulate on the east end of the Libby railyard where rail cars were switched, and W.R. Grace was responsible for cleaning up vermiculite waste" (page 11).

The vermiculite contamination reported by EPA is not limited to the east end of the railyard. EPA maps of where vermiculite was found, and of where decontamination occurred, is not limited to the east end of the railyard.

BNSF is the land owner of the railyard; I am unaware of documentation that W.R. Grace was responsible for / liable for cleaning up or controlling emissions from the vermiculite waste in the railyard. EPA mandated the cleanup of BNSF's asbestos-contaminated properties in Libby, which BNSF performed (paid subcontractors to perform) under an Administrative Order. To my understanding, those steps and others establish and reflect BNSF's legal responsibility for / liability for "cleaning up vermiculite waste" at the railyard.



Julian Marshall

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Appendix A: Soybean Oil Treatment Documents

GRACE

Construction Products Division

TO: A. N. Crawford
F. W. Eaton
T. E. Hamilton
M. Stoler
D. D. Walczyk
J. W. Wolter

DATE: November 16, 1983

FROM: S. Venuti

SUBJECT: Placarding

CC: R. J. Bettacchi
R. C. Ericson
H. A. Eschenbach
R. C. Walsh

FILE: Vermiculite
Concentrate Labels

The Director's Conference Room has been reserved for a meeting 9:00 am, Monday - November 28, 1983. The purpose of this meeting will be to discuss the data base necessary to support removal of the asbestos placard from vermiculite concentrate rail cars.

Specifically, we need to define:

1. The exposure level at which OSHA Regulations no longer require placarding.

2. The number and types of locations where sampling will be necessary.

3. The minimum number of samplings necessary at each location.

Please let me know if you will be able to attend.

Thank you.

S. Venuti

SV:dm

GOVERNMENT EXHIBIT 407

WRG05178071

043340

BNSF 14807

SOURCE	TEST	CONCENTRATE TYPE	FIBER COUNT CONTROL	SOYBEAN OIL @ 4 LBS./TON	REDUCTION FACTOR
RFTS #6951 F.W. Eaton 12/82	Dearborn Chemical Barrel Transfer (Personnel)	L-4	Avg. 9.39 f/cc (12 min.exposure)	Avg. 0.84 f/cc (12 min.exposure)	11.2
Monthly Report for December-1982, J.R. Hindman - 1/83	Fibrous Aerosol Monitor (FAM) (150g/minute/10 min. total)	L-4	Avg. 18.39 f/cc	Avg. 1.81 f/cc	10.2
Tremolite Binder Project Update, J.R. Hindman - 2/83	(FAM)	L-1 L-2 L-3 L-4 L-5	Avg. 17.81 f/cc Avg. 30.16 f/cc Avg. 42.54 f/cc Avg. 39.40 f/cc Avg. 27.97 f/cc	Avg. 1.15 f/cc Avg. 0.32 f/cc Avg. 0.36 f/cc Avg. 2.75 f/cc Avg. 2.80 f/cc (88 lbs./ton)	15.5 94.3 118.2 14.3 10.0
Tremolite Binder Project (L-1 & L-2 Shipped to New Orleans and Weedsport) J.R. Hindman-3/83	(FAM)	L-1 L-2 L-4	Avg. 6.84 f/cc Avg. 19.04 f/cc Avg. 20.65 f/cc	Avg. 0.29 f/cc Avg. 0.12 f/cc (4.5 lbs./ton) Avg. 2.37 f/cc (4.5 lbs./ton)	23.6 15.86 8.7
Measured Area Exposures During Loading of SEO Treated and Untreated Vermiculite Concentrates (#3 Shipped to Wilder, #4 Shipped to N.Orleans), J.R. Hindman - 10/5/83	Engineering Samples (10-15 minutes each)	L-3 (Tunnel and Scale Belt) (Sample House) (Above Rail Car)	Avg. 10.30 f/cc Avg. 29.92 f/cc Avg. 1.35 f/cc	Avg. 0.10 f/cc (4.5 lbs./ton) Avg. 0.96 f/cc (4.5 lbs.ton) Avg. 0.08 f/cc (4.5 lbs./ton)	103.0 31.2 16.9
		L-4 (Chute Below Production Bin) (Sample House) (Above Rail Car)	Avg. 10.33 f/cc Avg. 4.53 f/cc Avg. 2.31 f/cc	Avg. 0.09 f/cc Avg. 0.16 f/cc Avg. 0.09 f/cc	114.8 28.3 25.7

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BNSF 14808

CONFIDENTIAL

GRACE

Construction Products Division

TO: Distribution

DATE: December 1, 1983

FROM: S. Venuti

SUBJECT: Vermiculite Concentrate Labels

FILE: Verm.Conc.Labels

This is to highlight the results of the November 28th discussion regarding removal of the asbestos warning label on shipments of Soybean Oil-Treated (SBO) Libby Vermiculite Concentrate. The meeting was attended by R. Bettacchi, A. Crawford, F. Eaton, R. Ericson, T. Hamilton, M. Stoler, S. Venuti, and W. Wright.

Conclusions

- Labelling requirements will be evaluated for concentrate shipments in two (2) categories: end-uses where the concentrate is used "as is" (wallboard customers), and end-uses where concentrate is expanded.
- The first priority will be to conduct personnel sampling at Domtar (an "as is" use) to determine exposure while handling concentrate at this wallboard customer location. Three (3) tests were recommended, followed by three (3) tests at at least one other wallboard customer facility.
- No testing will be conducted, for now, where the concentrate is expanded. Testing will be delayed until a complete switch can be made at Libby to treat all concentrate. At that time, a "worst case" situation will be evaluated.

These conclusions were reached after an in-depth discussion which focussed primarily on legal interpretation of the OSHA Standard 29CFR 1910.1001 and the Emergency Temporary Standard of 0.5 Fibers/CC Permissable Exposure Limit (PEL).

Discussion Highlights

- According to Mark Stoler's interpretation, the asbestos warning label is required unless "...during any reasonably foreseeable use, handling, storage disposal, processing or transportation, no airborne concentration of asbestos fibers in excess of (0.5 fibers/cc TWA) will be released."
- It was generally agreed that this determination could be easily made for SBO Concentrate at wallboard customer locations. Once data is established, warning labels may be removed on shipments to these customers.

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- It was also generally agreed that a similar determination would be subject to significantly more variables at "expander" customer locations. Actual personnel exposures would depend not only on handling of Unexpanded SBO Concentrate, but also on the expanding process and dust control effectiveness.

- In either case, information (such as an M.S.D.S.) must be provided to all customers regarding the actual tremolite content of the SBO Concentrate. This is so employers can determine compliance with the standard which requires medical examinations at 0.1 fibers/cc TWA.

- Two other labelling considerations were identified: State Right-To-Know Laws and Product Liability.

- New Right-To-Know Laws have just been established and others are in development. The potential impact on labelling is not known, but is being assessed by Q. A. and Legal.

- Product Liability can influence label decisions independent of government regulations. Such decisions are business decisions based on legal, moral, and financial considerations.

- Finally, it was requested that the information gathered to date on airborne fiber level reduction, be tabulated. The attached table summarizes the information supplied by Al Crawford. It should be noted that the fiber levels are not expressed as time weighted averages since such a calculation is not possible for the test models used. The data is presented as a comparison of treated vs. untreated concentrates. In every case, airborne levels are significantly reduced when the concentrate is treated with Soybean Oil (SBO). This fact indicates a high probability of very low to nonexistent personnel exposures for "as is" end-users.

S. Venuti

SV:dm

Attachments

WRG05178070

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0409-2

Invoice Date, Plant Number, Shipped To, Quantity, & Description

Invoice dates of 12/31/2005=unknown or illegible

Invoice Date	Plant #	Ship To Company / Division Name	Shipped To Location	City & State	Notes (as written on Invoice)
11/16/1988	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
32.50	65,000.00	No. 2 Crude Vermiculite			
6/26/2000	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
95.00	190,000.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
6/13/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
32.50	65,000.00	No. 2 Crude Vermiculite			
6/13/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
64.10	128,200.00	No. 3 Crude Vermiculite			
4/2/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
32.50	65,000.00	No. 2 Crude Vermiculite			
4/2/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
64.00	128,000.00	No. 3 Crude Vermiculite			
5/13/1986	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
96.80	193,600.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
1/14/1986	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
96.60	193,200.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
10/24/1986	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	**Pounds**				
96.40	192,800.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			

Invoice Date	Plant #	Ship To Company / Division Name	Shipped To Location	City & State	Tons	Pounds	Notes (as written on Invoice)
> 10/30/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	96.40	192,800.00	No. 3 Crude Vermiculite, Oil Treated
> 8/20/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	96.10	192,200.00	No. 2 Crude Vermiculite, Oil Treated, No. 3 Crude Vermiculite, Oil Treated
> 2/21/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	96.60	193,200.00	No. 3 Crude Vermiculite No. 2 Crude Vermiculite
> 12/31/2005	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	61.70	123,400.00	Hopper (2) No. 2 Crude Vermiculite
					32.00	64,000.00	Hopper (3) No. 3 Crude Vermiculite
> 10/1/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	97.20	194,400.00	No. 3 Crude Vermiculite, Oil Treated, No. 4 Crude Vermiculite, Oil Treated
> 8/20/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	96.10	192,200.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite, Oil Treated
> 11/16/1988	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	64.20	128,400.00	No. 3 Crude Vermiculite
> 9/1/1988	711	Robinson Insulation Company Construction Products Division	1226 River Drive	Great Falls, MT	32.50	65,000.00	No. 2 Crude Vermiculite
> 2/21/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	96.60	193,200.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite, Oil Treated

Invoice Date	Plant #	Ship To Company / Division Name	Shipped To Location	City & State	Notes (as written on Invoice)
4/2/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	Pounds				
96.50	193,000.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
6/13/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	Pounds				
96.60	193,200.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
5/4/1988	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	Pounds				
94.60	189,200.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
3/28/1988	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	Oil Treated
Tons	Pounds				
96.60	193,200.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
1/7/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	Pounds				
96.70	193,400.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
1/14/1986	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	Oil Treated
Tons	Pounds				
96.60	193,200.00	No. 2 Crude Vermiculite, No. 3 Crude Vermiculite			
10/1/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	Oil Treated
Tons	Pounds				
97.20	194,400.00	No. 3 Crude Vermiculite, No. 4 Crude Vermiculite			
10/30/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	Oil Treated
Tons	Pounds				
96.40	192,800.00	No. 3 Crude Vermiculite			
1/7/1985	711	Robinson Insulation Company	1226 River Drive	Great Falls, MT	
Tons	Pounds				
96.70	193,400.00	No. 2 Crude Vermiculite No. 3 Crude Vermiculite			
State Subtotals	State	MT			Invoices: 27

Invoices: 27

CD1 / 231358 / 10 pgs.

Z-TEMP. MATERIAL SAFETY DATA SHEET Page 1 of 10

MSDS PREPARED BY: Environmental Health Dept. Construction Products Div.
W.R.Grace & Co.-Conn.
62 Whittemore Ave.
Cambridge, MA 02140

W. R. Grace & Co. of Canada Ltd.
294 Clements Rd. West
Ajax, Ontario, L1S 3C6

2513

Telephone Number for Information and Emergency Response
In USA: (617) 876-1400
In Canada: (416) 683-8561

MSDS Number: Z-TEMP. 000USA Cancels MSDS # NEW Date: 04/13/1992

SECTION I - PRODUCT IDENTIFICATION

Trade Names and Synonyms: VERMICULITE CONCENTRATE/ LIBBY NON DUST SUPPRESSED

(SEE SECTION 12 FOR ADDITIONAL PRODUCT IDENTIFICATION)

Chemical Names and Family: Libby, Montana Vermiculite Concentrate; Magnesium-Aluminosilicate Mineral.

Product Use: Various Industrial Uses

Formula: $(Mg,Ca,K,Fe^{II})_3 \cdot (Si,Al,Fe^{III})_4O_{10}(OH)_2 \cdot 4(H_2O)$

CAS# (Chemical Abstract Service): 01318-00-9

Transportation Hazard Classification

United States DOT	Canadian Regulations
PROPER SHIPPING NAME: Not Applicable	TDG CLASS: Nonhazardous
HAZARD CLASS: Nonhazardous	
IDENTIFICATION #: Not Applicable	
LABEL(s) REQUIRED: Not Applicable	

Surface Freight Classification: Crude Vermiculite Ore

NPCA-HMIS Hazard Index:
- Health: 1 *
- Flammability: 0
- Reactivity: 0
- Personal Protection: E (See Section VIII)

SECTION 2 - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

INGREDIENT (Chemical Name, CAS#, & Common Name)	% By Wt.	TOXICITY DATA LD_{50}, LC_{50} etc. (See Section IX for Exposure Limits)
Respirable Crystalline Silica (Quartz) CAS# 14808-60-7 1305f	Typically <1%	No Data Available

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SECTION 2 – HAZARDOUS INGREDIENTS/IDENTITY INFORMATION (Con't)

INGREDIENT (Chemical Name, CAS#, & Common Name)	% By Wt.	TOXICITY DATA: LD_{50} & LC_{50} (See Section IX for Exposure Limits)
Tremolite Asbestos CAS# 14567-73-8	Typically 0.3-1%	No Data Available

1306f

SECTION 3 – PHYSICAL DATA/CHEMICAL CHARACTERISTICS

Boiling Point:	Not Applicable	Specific Gravity (H2O = 1)	Not Applicable
Vapor Pressure (mm Hg.)	Not Applicable	% Volatiles	Not Applicable
Vapor Density(AIR = 1)	Not Applicable	Evaporation Rate (Butyl Acetate = 1)	Not Applicable
Solubility in Water:	None	pH	Not Applicable

Bulk Density (#/cu. ft): 50-65

Appearance and Odor: Dark greenish brown to golden brown in color. Flake shaped. No odor.

Odor Threshold:
Unknown

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SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point: None
Method Used: Not Applicable
N.F.P.A. Rating: Not Applicable

Flammable Limits:
LEL N.A. UEL N.A.

Extinguishing Media
Not Applicable

Special Fire Fighting Procedures
Not Applicable

Unusual Fire and Explosion Hazards
Not Applicable

SECTION 5 - REACTIVITY DATA

Stable under normal conditions (yes or no): YES
Conditions or Materials to avoid (which may react or cause instability):
None Known

Hazardous Decomposition or Byproducts:
None Known

Hazardous Polymerization:
Will not occur

Conditions to Avoid:
None Known

SECTION 6 - HEALTH HAZARD DATA & TOXICOLOGICAL PROPERTIES

(Include all known acute and chronic effects, signs, and symptoms of exposure and medical conditions generally aggravated by exposure)

Routes of Exposure:

Inhalation:
Vermiculite dust released in handling, expanding, and subsequent end use may cause symptoms typical of nuisance dusts including coughing, sneezing, and minor respiratory irritation. Medical conditions which may be aggravated by inhalation of dust include pre-existing upper respiratory and lung disease. Airborne dust may also contain asbestiform tremolite fibers and Respirable Crystalline Silica. See information below regarding carcinogenicity and long-term health effects.

SECTION 6 - HEALTH HAZARD DATA & TOXICOLOGICAL PROPERTIES (Con't)
(Include all known acute and chronic effects, signs, and symptoms of exposure and medical conditions generally aggravated by exposure)

Skin and Eye:
Direct eye contact may cause minor physical or mechanical irritation.
Skin contact not expected to cause any harmful effects.

Ingestion:
Adverse health effects are not expected as a result of ingestion.

Carcinogenicity According to NTP, IARC and OSHA:
Operations involving the use and/or expansion of Vermiculite Concentrate may create atmospheres containing tremolite fibers, a form of asbestos. According to NTP, IARC and OSHA 29 CFR 1910.0001 (Appendix 6), asbestos fibers "can cause disabling respiratory disease and various types of disease if the fibers are inhaled." Risk of disease is significantly increased by smoking. Ingestion of fibers has also been associated with increased risk of disease. Diseases associated with asbestos fiber include: Lung Cancer, Asbestosis, Mesothelioma, and cancer of the stomach and colon. "Mesothelioma is a rare cancer of the thin membrane lining of the chest and abdomen. Symptoms of mesothelioma include shortness of breath and pain in the walls of the chest and/or abdomen."

In addition, atmospheres containing Respirable Crystalline Silica may be created. Crystalline Silica has been classified as a probable human carcinogen by IARC, a unit of the World Health Organization. NTP has included Silica Crystalline (respirable) as a substance reasonably anticipated to be a carcinogen based on sufficient animal and limited human data. See exposure limits specified in Section 9 of this MSDS. Long-term inhalation of Respirable Crystalline Silica may cause lung disease including silicosis and lung cancer.

SECTION 7 - EMERGENCY AND FIRST AID PROCEDURES

In case of EYE contact, do not rub eyes. Flush with plenty of water while holding eyelids apart. If irritation, blinking or tearing occur and persist, consult a physician.

Adverse health effects are not expected if SWALLOWED. Consult a physician if symptoms develop.

If INHALED, get fresh air. If symptoms of irritation occur and persist, consult a physician.

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SECTION 8 - PREVENTIVE & CONTROL MEASURES

Warning Statements:
DANGER!
... Libby, Montana Vermiculite Concentrate, CAS# 1318-00-9.
... Contains Asbestiform Tremolite CAS# 14567-73-8 and Total and Respirable Crystalline Silica (Quartz) CAS# 14808-60-7.
... Avoid creating dust.
... Cancer, silicosis and other lung disease hazard.
... Inhalation of Vermiculite Concentrate Dust (CAS# 1318-00-9) may cause slight physical irritation of the respiratory tract resulting in coughing or sneezing.
... Dust may cause slight physical or mechanical irritation to eyes.

Precautionary Measures:
... Avoid contact with eyes. (Wear goggles if necessary.)
... Avoid inhalation of airborne dust. (See MSDS Section 8 for information regarding respirators and ventilation.)
... Equip hoppers with dust covers where applicable.
... For professional use only. Keep out of children's reach.

Respiratory Protection:
A NIOSH Type TC-21C-XXX dust respirator is recommended to control exposure to vermiculite and Respirable Crystalline Silica (Quartz) dust within the limits prescribed in Section 9 of this MSDS. If handling results in exposure to tremolite fiber in excess of the Permissible Exposure Level, respiratory protection must be provided in accordance with CFR 1910.0001, Paragraph (g) - Respiratory Protection.

Ventilation:

Local Exhaust:	Recommended
Mechanical:	Recommended
Special:	Refer to 29 CFR 1910.1001 (f) Methods of Compliance.
Other:	Refer to 29 CFR 1910.1001 (f) Methods of Compliance.

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SECTION 8 - PREVENTIVE & CONTROL MEASURES (Con't)

Skin Protection:
Not generally required.

Eye Protection:
Goggles recommended when dust is created.

Other Protective Clothing or Equipment:
Not generally required.

Work/Hygienic Practices:

SUPPLEMENTAL INFORMATION
Vermiculite Concentrate

Vermiculite: Is processed from ore mined at the Libby, Montana mining operation, where W. R. Grace & Co. maintains high quality standards. The natural geologic formation at Libby contains other mineral components, in addition to vermiculite. One of these is asbestiform tremolite (defined as asbestos by OSHA). Grace's mining and milling process significantly reduces the tremolite content in vermiculite concentrate. However, it should be noted that there exists the potential for the release of airborne fiber. It should be noted that airborne fiber is released during expansion.

The United States Occupational Safety and Health Administration (OSHA) has established regulations regarding occupational exposure to airborne asbestos fibers including tremolite (29 CFR 1910.1001). OSHA regulations include a permissible exposure level (PEL) of 0.2 fibers/cc (8 hr. time weighted average), an excursion limit of 1.0 fiber/cc (for a 30 minute exposure) and an action level of 0.1 fibers/cc (8 hr. time weighted average).

Paragraph (d) (2) of the standard requires that "each employer who has a workplace or work operation covered by this standard ... shall perform initial monitoring of employees who are or may reasonably be expected to be exposed to airborne concentrations at or above the action level and/or the excursion limit." Although we believe that exposures below these limits can be achieved through proper handling and/or engineering control, we recognize that fiber release is possible. Accordingly, we recommend that users of this product familiarize themselves with the requirement of 29 CFR 1910.1001 and perform the initial monitoring to determine what steps, if any, are required to comply with the rest of the standard.

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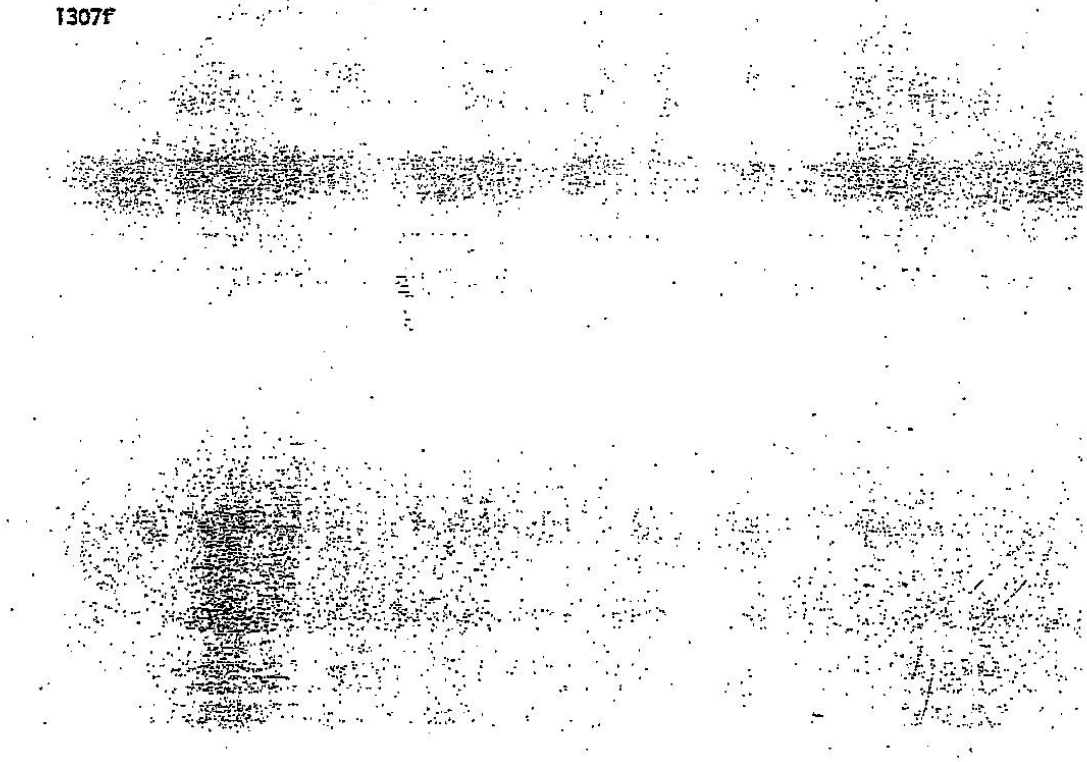
You should also be aware that Grace treats our standard Libby expanded vermiculite products with a water binder. Objective data collected in a variety of end use applications of the product, clearly indicates the addition of water to vermiculite can control the release of airborne fiber concentration below the excursion limit and the action level. Further information regarding this is available upon request.

Respirable Crystalline Silica(Quartz)	Section 2 of this MSDS indicates that this product can contain Respirable Crystalline Silica (Quartz) at <1% by weight. Crystalline Silica (Quartz) is a naturally occurring mineral that is commonly contained in materials that are mined from the earth's surface such as sand, limestone, clay and gypsum. Total Crystalline Silica (Quartz) is comprised of respirable and nonrespirable size particles. The health hazards associated with quartz are tied to the respirable size particles. We believe that the quartz present in vermiculite is predominately nonrespirable. However, handling and processing may create respirable particles. Therefore, potential exposures must be considered.

I307f



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SECTION 9 - HAZARDOUS INGREDIENTS EXPOSURE LIMITS - U.S. Only

INGREDIENT:	Exposure Limits OSHA	ACGIH	OTHER
ASBESTIFORM TREMOLITE CAS# 14567-73-8	0.2 fiber/cc 8hr.TWA 0.1 fiber/cc (Action Limit) 1.0 30 Min.Excur.Lim	2.0 fibers/cc TWA	----
NUISANCE PARTICULATES CAS# N/A	PEL: Total: 15 mg/m^3 Respirable: 5mg/m^3	TLV: Total: 10 mg/m^3 ----------	None Established
QUARTZ (CRYST. SILICA) CAS# 14808-60-7	PEL/TWA 0.1mg/m^3 as respirable dust	TLV/TWA 0.1mg/m^3 as respirable dust	NIOSH 0.05 mg/m^3 as respirable dust

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SECTION 10 - SPILL & DISPOSAL INFORMATION - U.S. Only

Libby Vermiculite concentrate may contain up to 1.0% tremolite asbestos which is a hazardous substance according to Section 307 of the Clean Air Act. Spills of asbestos equal to or greater than 1.0 lb. are reportable. Therefore, spills of concentrate equal to or greater than the Reportable Quantity (R.Q. = 100 lbs.) must be reported to the National Response Center immediately at 800-424-8802. Spill reporting requirements vary by region. Consult MSDS Section 11 and applicable state and local regulations.

If spilled, observe the handling procedures recommended above to avoid creating dust when cleaning up material. Remove spilled material for disposal or recycling.

According to US EPA (40 CFR 261.3), waste of this product is not defined as hazardous. Dispose of all waste in accordance with federal, state and local regulations.

SECTION 11 - GOVERNMENT REPORTING INFORMATION - U. S. Only

SARA Title III Reporting Information

Tier I & II Hazard Categories: DELAYED-CHRONIC
IMMEDIATE-ACUTE

Contains Extremely Hazardous-SARA III Section 302 Ingredient: NO
Comments:

Contains Toxic Chemical Release-SARA III Section 313 Ingredient: YES
Comments: Contains up to 1% Tremolite CAS# 14567-73-8 which appears as Asbestos CAS# 1332-21-4 on the 313 list.

Other Government Reporting Requirements:
In MASSACHUSETTS, spills equal to or greater than the RQ must also be reported to the DEP.
In NEW YORK, spills equal to or greater than the RQ must also be reported to the DEC.
In PENNSYLVANIA, asbestos is listed as both an environmental and a special hazard.

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SECTION 11 - GOVERNMENT REPORTING INFORMATION - U. S. Only (Con't)

Non-Hazardous Ingredient Disclosure:

SECTION 12 - PRODUCT IDENTIFICATION/TRADENAME ADDENDUM

The information contained in this Material Safety Data Sheet is applicable to the following products:
VERMICULITE CONCENTRATE/LIBBY NON DUST SURPRESSED

"THE DATA INCLUDED HEREIN ARE PRESENTED ACCORDING TO W. R. GRACE & CO.-CONN's PRACTICES CURRENT AT THE TIME OF PREPARATION HEREOF, ARE MADE AVAILABLE SOLELY FOR THE CONSIDERATION, INVESTIGATION AND VERIFICATION OF THE ORIGINAL RECIPIENTS HEREOF AND DO NOT CONSTITUTE A REPRESENTATION OR WARRANTY FOR WHICH GRACE ASSUMES LEGAL RESPONSIBILITY. IT IS THE RESPONSIBILITY OF A RECIPIENT OF THIS DATA TO REMAIN CURRENTLY INFORMED ON CHEMICAL HAZARD INFORMATION, TO DESIGN AND UPDATE ITS OWN PROGRAM AND TO COMPLY WITH ALL NATIONAL, FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS APPLICABLE TO SAFETY, OCCUPATIONAL HEALTH, RIGHT-TO-KNOW AND ENVIRONMENTAL PROTECTION."

BNSF HHP-001318

Appendix B: Letters from BNSF Industrial Hygienist Mark Mitchell

BNSF

MARK A. MITCHELL, CIH,ROH,CSP
Manager Industrial Hygiene

Burlington Northern Santa Fe

80 44th Avenue N.E.
Minneapolis, MN 55421

Phone: 763-782-3418
Fax: 763-782-3118
E-mail: Mark.Mitchell@BNSF.COM

June 19, 2001

Robert Erickson
BNSF Railway
500 Depot Street, 2nd Floor
Whitefish, MT 59937

Employee #:

Dear Mr. Erickson

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you on April 19, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the sample that was collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April 17, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF
MARK A. MITCHELL, CIH,ROH,CSP
Manager Industrial Hygiene
Burlington Northern Santa Fe
80 44th Avenue N.E.
Minneapolis, MN 55421
Phone: 763-782-3418
Fax: 763-782-3118
E-mail: Mark.Mitchell@BNSF.COM

June 19, 2001

Arne Olson
BNSF Railway Roadmaster
P.O. Box 789
Libby, MT 59923

Dear Mr. Olson:

This letter summarizes the air monitoring study that was conducted in April and may of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your employee's normal work routines was a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of their individual work tasks.

The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area. The results of the monitoring indicate that your employees were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, with the exception of George Gray, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc. Mr. Gray's STEL exposure did exceed the OSHA 30-minute limit however; these air concentrations did not exceed the maximum use concentration for the type of respirator that he was wearing (powered air-purifying respirator) when the sample was collected on him.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that your employees should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that they may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

Several area samples collected in April exceeded the OSHA STEL of 1.0 f/cc. These samples were collected on the ballast regulator while it was performing brooming activities within the Libby Yard. My recommendation is to keep all BNSF MOW personnel out of the Libby Yard to

BNSF 2372

BNSF
MARK A. MITCHELL, CIH,ROH,CSP
Manager Industrial Hygiene

Burlington Northern Santa Fe
80 44th Avenue N.E.
Minneapolis, MN 55421

Phone: 763-782-3418
Fax 763-782-3118
E-mail: Mark.Mitchell@BNSF.COM

June 19, 2001

Michael Higgins
BNSF Railway
500 Depot Street, 2nd Floor
Whitefish, MT 59937

Employee #:

Dear Mr. Higgins:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you on April 19, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the sample that was collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April 17, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF 2374

BNSF

MARK A. MITCHELL, CIH,ROH,CSP
Manager Industrial Hygiene

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June 19, 2001

Donna Faller
BNSF Railway
500 Depot Street, 2nd Floor
Whitefish, MT 59937

Employee #:

Dear Mr. Faller:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you on April 19, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the sample that was collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April 17, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

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June 19, 2001

Jim Downing
BNSF Railway
500 Depot Street, 2nd Floor
Whitefish, MT 59937

Employee #:

Dear Mr. Downing:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you on April 17, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the sample that was collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April 17, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF 2378

BNSF

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June 19, 2001

James Whitcher
BNSF Railway
500 Depot Street, 2nd Floor
Whitefish, MT 59937

Employee #:

Dear Mr. Whitcher:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you on April 17, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the sample that was collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April 17, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

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June 19, 2001

Dean Cole
BNSF Railway
500 Depot Street, 2nd Floor
Whitefish, MT 59937

Employee #:

Dear Mr. Cole:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you on April 17, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the sample that was collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April 17, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF

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June 19, 2001

Stuart Hart
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Hart:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF
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June 19, 2001

George Gray
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Gray:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). However, Sample #124 collected on April 25, 2001 was collected on a short-term basis and did exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc. The air concentration as represented by this air sample as well as the area samples collected on the ballast regulator that you were operating during the study, did not exceed the maximum use concentration of the powered air-purifying respirator that you wore during the monitoring. Additionally, the decontamination procedures that you followed during the course of your work activities and at the end of each day allowed you to keep the asbestos fibers from entering your breathing zone and kept the fibers from contaminating your street clothing.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You

BNSF 2386

BNSF

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June 19, 2001

David Arnold
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Arnold:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF 2388

BNSF

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June 19, 2001

Joey Snyder
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Snyder:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF

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June 19, 2001

Don Smith
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Smith:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

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June 19, 2001

Charles Guthrie
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Guthrie:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF

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June 19, 2001

Kerry Tunison
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Tunison:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF

MARK A. MITCHELL, CIH,ROH,CSP
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June 19, 2001

Loyde Miller
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Miller:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF

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June 19, 2001

Michael Williams
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Williams:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

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BNSF

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June 19, 2001

Rodney Schulte
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Schulte:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

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BNSF

MARK A. MITCHELL, CIH,ROH,CSP
Manager Industrial Hygiene

Burlington Northern Santa Fe

80 44th Avenue N.E.
Minneapolis, MN 55421

Phone: 763-782-3418
Fax: 763-782-3118
E-mail: Mark.Mitchell@BNSF.COM

June 19, 2001

Scott Granger
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Granger:

Thank you for your participation with the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

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BNSF

MARK A. MITCHELL, CIH,ROH,CSP
Manager Industrial Hygiene

Burlington Northern Santa Fe

80 44th Avenue N.E.
Minneapolis, MN 55421

Phone: 763-782-3418
Fax: 763-782-3118
E-mail: Mark.Mitchell@BNSF.COM

June 19, 2001

Roger Renshaw
BNSF Railway MOW Section Crew
P.O. Box 789
Libby, MT 59923

Employee #:

Dear Mr. Renshaw:

Thank you for your participation with the air monitoring study that was conducted in April and May of this year at the BNSF site located in Libby, Montana. You participation in helping me characterize employee exposures was greatly appreciated. The Libby MOW Section is to be commended for their collective effort in helping to make the arrangements to complete the air monitoring. I realize that accommodating the personal protective equipment as well as all of the decontamination procedures into your normal work routines were a challenge for each of the Section members. However, without your help and cooperation, I could not have completed the exposure characterizations of your individual work tasks.

This letter summarizes the results of the personal asbestos air monitoring that was collected on you in April and May, 2001. The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area.

The results of the monitoring indicate that you were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that you should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that you may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

BNSF

MARK A. MITCHELL, CIH,ROH,CSP
Manager Industrial Hygiene

Burlington Northern Santa Fe

80 44th Avenue N.E.
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June 19, 2001

Rico Montini
BNSF Railway Trainmaster
500 Depot Street, 2nd Floor
Whitefish, MT 59937

Dear Mr. Montini:

This letter summarizes the air monitoring study that was conducted in April of this year at the BNSF site located in Libby, Montana. Your participation in helping me characterize employee exposures was greatly appreciated.

The purpose of the air monitoring was to determine if BNSF employees were exposed to elevated levels of airborne asbestos while performing their duties in the Libby yard as well as the on the main-line track in the Libby area. The results of the monitoring indicate that your employees were not exposed to airborne asbestos levels that exceeded the Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (TWA). Additionally, the samples that were collected on a short-term basis did not exceed the OSHA 30-minute Short Term Exposure Limit (STEL) of 1.0 f/cc.

Several area samples collected in April exceeded the OSHA STEL of 1.0 f/cc. These samples were collected on the ballast regulator while it was performing brooming activities within the Libby Yard. My recommendation is to keep all BNSF MOW personnel out of the Libby Yard to the extent possible. If BNSF MOW employees are to work in the yard, then reference the attached letter dated May 17, 2001 as to the appropriate level of personal protective equipment and appropriate decontamination procedures for their particular work activities. As for BNSF TEY personnel, their activities did not produce any elevated fiber levels while performing their duties working the Libby Local.

Attached are tables summarizing the air monitoring results that were collected on BNSF employees involved in the April and May, 2001 airborne asbestos sampling. Additionally, attached is a letter dated May 17, 2001, that was sent from Don Cleveland, Director Industrial Hygiene, to Ray Stephens, BNSF Assistant Vice President, Seattle Service Region. This letter prescribes the appropriate level of personal protection that your employees should wear, as well as the appropriate type of decontamination procedures that should be followed as a function of the type of work that they may be performing while in the project area located in Libby, Montana. You should already be familiar with the contents of the letter in that these are the same protocols and procedures that were followed while I was in Libby, Montana, conducting the air monitoring.

I am waiting for the weather to dry out prior to returning for another week of air monitoring MOW activities exclusively on the main-line.

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Defendant Ex. EE 1/14 1

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Feel free to contact me with any questions that you may have regarding the air monitoring results.

Sincerely,

Mark A. Mitchell

Attachments: Tables of air monitoring results
May 17, 2001 letter from Don Cleveland to Ray Stephens

C: Orest Dachniwshy
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Defendant Ex. EE 2/14

BN001567

BNSF

DON CLEVELAND,CIH
Director, Industrial Hygiene

The Burlington Northern and Santa Fe Railway Company

2500 Lou Menk Drive
AOB/GL
Fort Worth, TX 76131

Phone: 817.352.1632
Fax : 817.352.7507
E-mail don.cleveland@bnsf.com

May 17, 2001

Ray E.Stephens
Assistant Vice President, Seattle Service Region
Burlington Northern Santa Fe Railway
2454 Occidental Avenue South, Suite 1A
Seattle, WA 98134

Dear Ray:

Employee exposure assessments for airborne asbestos fibers were conducted during "soil-disturbing" and track maintenance activities in the yard and on the main line in Libby, Montana, from April 17, 2001, to April 26, 2001. The primary BNSF property affected span from approximately milepost 1320 to 1314. The contamination of soil was caused by W. R. Grace during vermiculite mining and processing operations. Subsequently, this was the area where the employee exposure assessments were conducted.

The following paragraphs describe the work practices and personal protective equipment used throughout the assessment, and based on the initial round of air monitoring results, need to be continued until air-monitoring data would demonstrate otherwise.

Three levels of personal protection have been identified based the activities that occur in the area. Although we can not list all of the different activities that could occur in the area, we are asking BNSF employees to "size-up" their specific activities relative to those listed below and use the corresponding PPE.

1. Employees who do not impact the soil such as track inspectors, TEY personnel, or officers hi-railing in the area are not required to wear PPE above and beyond what they would normally wear while conducting business on railroad property. We do encourage these individuals to wash off their boots with water when they are finished working in the area.

2. Employees who "moderately" impact the soil such as changing out a tie, hand tamping the ballast, track welding and rail grinding are required to wear a disposable cover-all and a half-face respirator. They need to be enrolled in the BNSF Respiratory Protection Program, medically qualified to wear a respirator and must come to work clean-shaven. At the end of their work activities, they must remove the disposable suit and dispose of it in a polyethylene plastic bag. They must wash off their boots with water and clean their respirators. We have made available disposable hand wipes and encourage their use during the day at such times as coffee and lunch breaks, or any time when they might choose to smoke, eat and/or drink.

Defendant Ex. EE 3/14

3. Employees who impact the soil in the most aggressive manner, (i.e., surfacing crew employees) are required to wear the maximum protection prescribed for this area and adhere to the following decontamination guidelines:

    - Wear full-faced *Powered Air Purifying Respirators.*
    - Change out of their street clothing and don re-usable or disposable coveralls.
        - Any type of re-usable garment that is worn during the workday needs to stay on the "dirty" side of the decontamination trailer and must be washed by a professional laundry service. BNSF must supply these individuals with an ample supply of re-usable and or disposable garments
    - Employees must wash off their boots with water and clean their respirators.
    - Employees must vacuum off the gross debris on the outside of their coveralls prior to entering the decontamination trailer.
    - Employees must take a shower in the "decontamination trailer" prior to donning their street clothing.

Lance Vallone, manager of safety for this territory, has been fully briefed on the proper procedures for employees engaged in work activities in this area, and has assumed full responsibility for overseeing the decontamination procedures, respirator qualifications, respirator fit-testing and record keeping. He is also responsible for ensuring the stocking PPE and coordinating laundry services for re-usable work garments.

My group will continue to conduct air monitoring in the future on BNSF employees working in this area. Air monitoring is currently taking place this week to assess air concentrations during the fire-guarding procedures. Additionally, the IH department will conduct air monitoring on the main line during the dry season during maintenance of way activities. To this end, we have asked the engineering department to keep us apprised of all scheduled activities in the area as well as emergency activities as they occur.

I would like to take this opportunity to thank Roadmaster Arne Olson for his support during the air monitoring activities and give special recognition to his *section employees* for all of their help and cooperation during this challenging air monitoring project. These employees work environments were significantly augmented while accommodating the stringent protective measures that we imposed throughout this assessment, and should be commended for their efforts to make BNSF a safe work environment.

Please call me at 817-352-1632 with any questions that you may have.

Sincerely,

Don Cleveland

cc:

Carl Ice	Jim Shea	Dave Hestermann	Mark Mitchell
Gloria Zamora	Lavoy Reed	Art Charrow	Dan McCaskill
David Dealy	Bob Attridge	Arnie Olson	Dennis Bullock
Mark Kotter	John Gooding	Lance Vallone	

Defendant Ex. EE 4/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 17, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Comments
1	Blank	NA	NA	ND	ND
2	Area	Hi-rail cab	86	<0.0054*	ND, Hi-railing through project area
3	Personal	Don Smith	43	<0.011**	ND, Hi-railing through project area
101	Personal	Dan Westrum	474	<0.001*	ND, Riding in trailing unit-Libby Local
102	Personal	Jim Whitcher	482	<0.00097*	ND, Conductor, lead unit
103	Personal	Jim Downing	464	<0.00099*	ND, Brakeman, lead unit
104	Personal	Dean Cole	460	<0.00099*	ND, Engineer, lead unit
105	Personal	Jim Downing	84	0.0039**	Brakeman, lead unit, on the ground sw
106	Personal	Jim Whitcher	78	<0.0058**	ND, Conductor, on the ground switching in y
107	Personal	Dean Cole	75	<0.006**	ND, Engineer, switching in yard
108	Blank	NA	NA	ND	ND
109	Blank	NA	NA	ND	ND

OSHA = Occupational Safety and Health Administration
* = OSHA regulates asbestos at 0.1 f/cc as an 8-hour time weighted average
** = OSHA regulates asbestos at 1.0 f/cc as a 30-minute Short Term Exposure Limit

NA = Not applicable
ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001570

BNSF_505_0020-0005

Defendant Ex. EE 5/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 18, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Comments
101	Personal	Stuart Hart	164	<0.0043*	ND, Tamping main line @1318
102	Personal	David Arnold	282	0.0033*	Regulator on main line @
103	Personal	Chuck Guthrie	Sample voided	NA	Hose came off of the pur
104	Personal	Stuart Hart	25	<0.018**	ND, Tamping main line @1318
105	Area	Ballast regulator	50	0.0094**	Above broom outside the
106	Area	Tamper	32	<0.015**	ND, 18 inches from tamper tyn
107	Personal	David Arnold	51	<0.0091**	ND, Regulator on main line @
108	Personal	Chuck Guthrie	72	<0.0064**	ND, Walking next to tamper &
1	Personal	Joey Snyder	131	<0.0035*	ND, Welding on the main line
2***	Personal	Michael Williams	134	<0.19*	ND, Grinding main line@1319
3	Personal	Joey Snyder	30	<0.015**	ND, Welding on the main line@
4	Personal	Joey Snyder	30	<0.015**	ND, Welding on the main line@
5	Blank	NA	NA	ND	ND

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*** = Overloaded sample was re-deposited for analysis.

NA = Not applicable
ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001571

BNSF_505_0020-0006

Defendant Ex. EE 6/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 19, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Comments
1	Blank	NA	NA	ND	ND, Exposed in clean side of decon trailer
2	Area	Decon trailer	463	<0.00077*	ND, Clean room of decon trailer
3	Area	Decon trailer	460	<0.00089*	ND, Dirty room of decon trailer
4	Area	Section house	450	<0.00072*	ND, MOW office, south wall bookshelf
5	Personal	Stuart Hart	204	<0.0023*	ND, Tamping main line and #2 track in yard
6	Personal	David Arnold	289	<0.0016*	Regulator; limited tamping in yard, #2
7	Personal	Chuck Guthrie	295	<0.0015*	ND, Walking in yard and operating regulato
8	Personal	Stuart Hart	30	<0.015**	ND, Tamping eastbound on main line @ 13
9	Personal	David Arnold	30	<0.015**	ND, Regulator on #2 yard track brooming w
10	Personal	Roger Renshaw	30	<0.016**	ND, Shoveling gravel chips
200	Personal	Scott Granger	69	<0.0067**	ND, Operating crane while dumping chips o
201	Personal	Rod Schulte	304	<0.0027*	ND, Spreading chips on yard track #2
202	Personal	Roger Renshaw	301	<0.0015*	ND, Acting foreman spreading chips on yar
203	Personal	Loyde Miller	256	<0.0018*	ND, Spreading chips on yard track #2
101	Personal	Mike Higgins	512	<0.00088*	ND, Engineer on Libby local
102	Personal	Donna Faller	293	<0.0015*	ND, Conductor on Libby local
103	Personal	Bob Erickson	474	<0.001*	ND, Brakeman on Libby local
104	Personal	Donna Faller	63	<0.0058**	ND, Throwing switches in the Libby yard
105	Personal	Mike Higgins	41	<0.011**	ND, Operating locomotive in the Libby yard
106	Personal	Bob Erickson	62	<0.0075**	ND, Throwing switches in the Libby yard

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ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001572

BNSF_505_0020-0007

Defendant Ex. EE 7/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 20, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Comments
101***	Personal	Chuck Guthrie	34	<0.98**	ND, Brooming @ 5th Street Cross
102	Personal	Stuart Hart	70	<0.0067**	ND, Tamping in west end of yard
103	Personal	David Arnold	35	<0.013**	ND, Brooming @ 5th Street Cross
104	Area	Regulator	68	<0.0067**	ND, Outside cab door; west end y
105	Personal	Chuck Guthrie	76	<0.0064**	ND, Brooming in the west end of t
106	Personal	David Arnold	62	<0.0074**	ND, Brooming in the west end of t
107	Area	Northeast yard	64	<0.0072**	ND, East end of yard along north
108	Blank	NA	NA	ND	ND, Field blank
109	Personal	Chuck Guthrie	64	<0.0076**	ND, Brooming/tamping east of 5th
110	Personal	David Arnold	101	<0.0046*	ND, Regulator east of 5th Street C
111	Personal	Stuart Hart	66	<0.007**	ND, Tamping east of 5th Street Cr
112	Area	Regulator	88	<0.0052*	ND, Outside regulator cab, @131

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*** = Overloaded sample was re-deposited for analysis.

NA = Not applicable
ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001573

BNSF_505_0020-0008

Defendant Ex. EE 8/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 23, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Commen
1	Personal	Roger Renshaw	123	<0.0037*	ND, Replacing ties & plates
2	Personal	Loyde Miller	122	<0.0037*	ND, Replacing ties & plates
3	Personal	Kerry Tunison	119	<0.0036*	ND, Replacing ties & plates
4	Blank	NA	NA	ND	ND
101	Area	Regulator	105	<0.004*	ND, Front end of machine @
102	Personal	George Gray	113	<0.0039*	ND, Regulator operator @ 1
103	Personal	Chuck Gutherie	111	<0.0039*	ND, Regulator operator @ 1
104	Area	Pick-up cab	190	<0.0022*	ND, Surfacing crew pick-up t
105	Personal	Stuart Hart	37	<0.012**	ND, Tamper operator from13
106	Area	Tamper, outside	60	<0.006**	ND, Left side, 2 feet from tyn
200	Area	Amtrak depot	231	<0.0038*	ND, East end of depot, 10 fe
201	Area	Libby yard	231	<0.00041*	ND, NE corner of section bui
202	Area	Decon trailer	35	<0.0027**	ND, Dirty side, end of day de

OSHA = Occupational Safety and Health Administration
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NA = Not applicable
ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001574

Defendant Ex. EE 9/14

BNSF_505_0020-0009

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 24, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Result (F/CC)	Comm
101	Personal	Stuart Hart	349	<0.0013*	ND, Tamper operator
102***	Personal	George Gray	378	<0.062*	ND, Regulator operator
103	Personal	Chuck Guthrie	350	<0.0011*	ND, Regulator operator,forema
104	Area	Pick-up truck cab	390	<0.0011*	ND, Middle of front seat
105***	Area	Regulator	43	<0.53**	ND, Above broom, east end of
106	Personal	George Gray	46	<0.0082**	ND, Regulator operator,main li
107	Personal	Stuart Hart	24	<0.016**	ND, Tamper operator, main lin
108	Area	Regulator cab	43	0.18**	Regulating in west end of
109	Area	Regulator	11	0.087**	Brooming in the yard
110	Area	Tamper	47	0.031**	Near tamper tynes, in yard
111***	Area	Regulator cab	27	0.77**	West yard brooming
112	Area	Regulator plow	29	0.1*	Plowing in center of yard,
114	Area	Regulator	40	0.095**	Plowing west end of yard,
115***	Area	Regulator	16	14**	Brooming center to west e
116***	Area	Regulator	20	1.1**	Plowing and sweeping wes
117	Area	Decon trailer	110	<0.0008*	ND, Clean room, four people s
118	Area	Decon trailer	18	<0.0052*	ND, Dirty room, two people sh
119	Blank	NA	NA	ND	ND, No asbestos detected
200	Area	Amtrak depot	208	0.00064*	Regulator passed by @ 14
201	Area	Libby yard	194	0.0087*	South edge of parking lot
1	Personal	Roger Renshaw	352	<0.0012*	ND, Changing switch & shoveli
2	Personal	Loyde Miller	351	0.0013*	Changing switch & shoveli
3	Personal	Kerry Tunison	354	<0.0013*	ND, Changing switch & shoveli
4	Area	Section truck cab	348	<0.0014*	ND, Center of truck cab, 1319/
5	Personal	Loyde Miller	30	<0.013**	ND, Shoveling rock on main lin
6	Personal	Roger Renshaw	30	<0.015**	ND, Shoveling rock on main lin

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** = OSHA regulates asbestos at 1.0 f/cc as a 30-minute Short Term Exposure Limit
*** = Overloaded sample was re-deposited for analysis.
NA = Not Applicable
ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001575

BNSF_505_0020-0010

Defendant Ex. EE 10/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 25, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Commer
200	Area	Yard	142	0.00097*	East of section house
201	Area	Amtrak depot	67	0.0013**	NE corner, regulator was b
202	Area	Yard parking lot	143	0.0017*	South edge of parking lot
203	Personal	Beth Regan	47	0.036**	Walking near regulator dur
204	Area	Amtrak depot	208	0.00043*	NE corner
205	Personal	Beth Regan	200	<0.0021*	ND, Walking near tamper in ya
206	Area	Yard parking lot	123	<0.0008*	ND, North side of lot near main
207	Area	Yard	118	<0.00078*	ND, East of section house
1	Personal	Stuart Hart	46	0.047**	Operating tamper, Trk #2,
2	Area	Tamper front	42	0.011**	Front end of tamper, Trk #2
101***	Area	Regulator front	22	1.2**	Brooming east yard
102***	Area	Regulator cab	240	0.22*	Brooming east yard
103	Area	Regulator rail	25	0.41**	Brooming east yard
104***	Area	Regulator skirt	21	<1.3**	ND, Broming east yard
105	Personal	George Gray	240	0.0055*	Regulator operator broomi
106***	Area	Regulator front	12	0.6**	Brooming in yard
107***	Area	Regulator skirt	10	2.6**	Brooming east yard Trk#2
108	Area	Regulator rail	10	0.64**	East yard, Trk #2
109***	Area	Regulator skirt	11	9.6**	Brooming east yard, Trk #2
110***	Area	Regulator front	11	7.2**	Brooming in east yard
111	Area	Regulator rail	10	0.77**	East yard, Trk #2
112	Area	Regulator skirt	15	0.53**	Brooming east yard, Trk #2
113***	Area	Regulator front	13	3.1**	Brooming east yard,Trk #2
114	Area	Regulator rail	9	0.53**	East yard, Trk #2
115***	Area	Regulator front	32	<0.83**	ND, Brooming
116***	Area	Regulator skirt	30	<0.88**	ND, Brooming main,1318-1319
117	Area	Regulator rail	33	<0.013**	ND, Brooming main,1318-1319
118	Area	Regulator	30	0.016**	Brooming main in yard, 13
119	Area	Regulator front	31	<0.016**	Brooming main 1316-1318
120	Area	Regulator rail	29	<0.015**	ND, Brooming 1316-1318
121	Area	Regulator rail	20	0.35**	Plowing Trk#2,east yard
122	Area	Regulator skirt	20	0.53**	ND, Plowing Trk #2, east yard
123	Area	Regulator front	20	0.19**	Plowing Trk #2,east yard
124***	Personal	George Gray	27	2.6**	Brooming yard, Trk #2
125	Blank	NA	NA	ND	ND

OSHA = Occupational Safety and Health Administration
NA = Not applicable
* = OSHA regulates asbestos at 0.1 f/cc as an 8-hour time weighted average
ND = None detected
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*** = Overloaded sample was re-deposited for analysis

BN001576

BNSF_505_0020-0011

Defendant Ex. EE 11/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on April 26, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Comments
1	Personal	Roger Renshaw	250	<0.0015*	ND, Behind tamper on main line M
2	Personal	Loyde Miller	250	<0.0019*	ND, Behind tamper on main line M
3	Personal	Roger Renshaw	72	<0.006**	ND, Hand tamping on main line MP
4	Area	SectionTruck cab	263	<0.0017*	ND, Center of cab
5	Area	Tamper tine	68	<0.0061**	ND, Near tine of tamper
200	Area	Tamper cab	136	<0.0028*	ND, Tamping on main line, MP 131
201	Personal	Stuart Hart	315	<0.0013*	ND, Tamper operator tamping MP
101	Personal	George Gray	294	0.0043*	Regulator operator main line a
102	Area	Regulator cab	89	0.015**	Plowing/brooming main line, y
103	Personal	George Gray	95	0.0046**	Regulator operator east main l
104	Area	Tamper tine	83	<0.0053**	ND, Tamping on main line, MP 131
105	Personal	Stuart Hart	81	<0.0057**	ND, Tamping on main line, MP 131
106	Personal	Chuck Gutherie	90	<0.0049**	ND, Foreman surfacing crew,main
107	Area	Regulator skirt	22	<0.018**	ND, Brooming/plowing east yard
108	Area	Regulator rail	22	0.021**	Brooming/plowing east yard
109	Area	Regulator front	20	<0.022**	ND, Brooming/plowing east yard
110	Area	Regulator front	43	0.01**	Brooming/plowing main line in
111	Area	Regulator rail	43	<0.011**	ND, Brooming/plowing main line in
112	Area	Regulator skirt	10	0.04**	Brooming/plowing main line in
113	Area	Regulator cab	59	<0.0073**	ND, Plowed,broomed Trk #5,bridge
114	Area	Regulator rail	25	0.018**	Plowing Trk #5 in east yard
115***	Area	Regulator skirt	26	<0.85**	ND, Plow Trk#5 east yard,no asbes
116	Area	Regulator front	26	0.017**	Plowing Trk #5 in east yard
117	Area	Regulator front	20	0.044**	Plowing/brooming Trk #5 in ea
118	Area	Regulator skirt	21	0.019**	Plowing/brooming Trk #5 in ea
119	Area	Regulator rail	21	<0.022**	ND, Plowing/brooming Trk #5 in ea
120	Area	Tamper tine	24	<0.018**	ND, Tamper not operating, TrK #5,
121	Area	Surface truck cab	321	<0.0014*	ND, East yard switch and along ma
122	Area	Decon-trailer	45	0.0021**	Two people showered out duri
123	Blank	NA	NA	ND	ND

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NA = Not applicable
ND = None detected
F/CC = Fibers per cubic centimeter

BN001577

BNSF_505_0020-0012

Defendant Ex. EE 12/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on May 16, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Comm
1	Personal	Roger Renshaw	260	<0.047*	ND, Operating loader along r
2	Area		61	<0.0072**	ND, Right headlight, MP 131
3	Area		62	<0.0072**	ND, Loader cab, MP 1314-13
4	Area		61	0.0071**	Right railing, MP 1314-1
5	Personal	Mark Mitchell	259	<0.0017*	ND, MP1314-1316 both sides
6	Area		45	<0.0098**	ND, Loader cab, MP 1314-13
7	Area		42	<0.011**	ND, Left headlight, MP 1314
8	Area		36	<0.012**	ND, Right railing, MP 1314-1
9	Area		75	<0.0059**	Loader cab, MP1314-13
10	Area		74	<0.006**	ND, Left headlight, MP 1314
11	Area		77	<0.0056**	ND, Right railing, MP 1314-1
12	Area		57	<0.0077**	ND, Left headlight, MP 1315
13	Area		57	<0.0078**	ND, Loader cab, MP 1315-13
14	Area		57	<0.0076**	ND, Right railing, MP 1315-1
15	Blank		NA	ND	ND Field blank
16	Blank		NA	ND	ND Field blank

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** = OSHA regulates asbestos at 1.0 f/cc as a short term exposure limit.

NA = Not applicable
ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001578

BNSF_505_0020-0013

Defendant Ex. EE 13/14

Libby, Montana
Asbestos Air Sample Results
Samples were collected on May 17, 2001

Sample ID	Type	Location	Sample Duration (minutes)	Sample Results (F/CC)	Commer
1	Personal	Roger Renshaw	126	<0.0036*	ND, Operating loader along mai
2	Area	Loader	36	<0.34**	ND, Loader cab, MP 1315.4 - 13
3	Area	Loader	35	<0.043**	ND, Left headlight, MP 1315.4 -
4	Area	Loader	34	0.013**	Right railing, MP 1315.4 - 1
5	Personal	Mark Mitchell	120	<0.0036*	ND, Following loader in pick-up
6	Area	Loader	56	<0.008**	ND, Right railing, MP 1316.6 - 1
7	Area	Loader	54	<0.0081**	ND, Left headlight, MP 1316.6 -
8	Area	Loader	53	<0.0084**	ND, Cab, MP 1316.6 - 1317.2
9	Personal	Roger Renshaw	133	0.092*	Operating loader from 1317.
10	Area	Loader	85	<0.0052**	ND, Right railing, MP 1317.1 - 1
11	Area	Loader	83	<0.0052**	ND, Left headlight, MP 1317.1 -
12	Area	Loader	80	<0.0056**	ND, Cab, MP 1317.1 - 1318.1
13	Area	Loader	21	<0.021**	ND, Right railing, 5th St. Bridge
14	Area	Loader	21	<0.021**	ND, Left headlight, 5th St. Bridg
15	Area	Loader	21	<0.021**	ND, Cab, 5th St. Bridge - 1318.8
16	Blank	NA	NA	ND	ND, Field blank

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ND = None detected
F/CC = Fibers per cubic centimeter of air

BN001579

BNSF_505_0020-0014

Defendant Ex. EE 14/14